HCD-EC68P/EC78P

SERVICE MANUAL

Ver. 1.0 2008.03

Photo : HCD-EC78P

US Model
HCD-EC68P/EC78P
Canadian Model
UK Model
HCD-EC78P
Australian Model
HCD-EC68P

- HCD-EC68P is the amplifier, CD player and tuner section in MHC-EC68Pi.
- HCD-EC78P is the amplifier, CD player and tuner section in MHC-EC78Pi.

Model Name Using Similar Mechanism	CDM77B-K6BD90-WOD	NEW
	CDM88A-K6BD90-WOD	HCD-EC68
Mechanism Type	Except EC78P (UK)	CDM77B-K6BD90-WOD
	EC78P (UK)	CDM88A-K6BD90-WOD
Base Unit Name		BU-K6BD90-WOD
Optical Pick-up Block Name		KSM-213DCP

SPECIFICATIONS

Main unit
AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
(HCD-EC78P The United States model only)
Low channel
With 8 ohm loads, both channels driven, from 120 – 10,000 Hz; 60 watts per channel minimum RMS power, with no more than 0.7% total harmonic distortion from 250 milliwatts to rated output.
High channel
With 8 ohm loads, both channels driven, from 2,000 – 13,000 Hz; 60 watts per channel minimum RMS power, with no more than 0.7% total harmonic distortion from 250 milliwatts to rated output.

AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
(HCD-EC68P The United States model only)
With 6 ohm loads, both channels driven, from 120 – 10,000 Hz; 40 watts per channel minimum RMS power, with no more than 0.7% total harmonic distortion from 250 milliwatts to rated output.

Amplifier section

HCD-EC78P: US and Canadian models
RMS output power (reference):
Low channel
95 W + 95 W (per channel at 8 Ω, 1 kHz, 10% THD)
High channel
95 W + 95 W (per channel at 8 Ω, 8 kHz, 10% THD)

HCD-EC78P: UK model
Power output (rated):
Low channel
50 W + 50 W (at 8 Ω, 1 kHz, 1% THD)
High channel
50 W + 50 W (at 8 Ω, 8 kHz, 1% THD)
RMS output power (reference):
Low channel
70 W + 70 W (per channel at 8 Ω, 1 kHz, 10% THD)
High channel
70 W + 70 W (per channel at 8 Ω, 8 kHz, 10% THD)

HCD-EC68P
RMS output power (reference):
70 W + 70 W (per channel at 6 Ω, 1 kHz, 10% THD)

Inputs
AUDIO IN (stereo mini jack):
Sensitivity 800 mV, impedance 22 kilohms

Outputs
PHONES (stereo mini jack):
Accepts headphones with an impedance of 8 Ω or more
SPEAKER: impedance
HCD-EC78P: 8 Ω
HCD-EC68P: 6 Ω

CD player section
System: Compact disc and digital audio system
Laser: Semiconductor laser (λ=770 – 810 nm)
Emission duration: continuous
Frequency response: 20 Hz – 20 kHz
Signal-to-noise ratio: More than 90 dB
Dynamic range: More than 88 dB

Tuner section
FM stereo, FM/AM superheterodyne tuner
Antenna:
FM lead antenna
AM loop antenna

FM tuner section:
Tuning range
North American model: 87.5 – 108.0 MHz (100 kHz step)
UK and Australian models: 87.5 – 108.0 MHz (50 kHz step)
Intermediate frequency: 10.7 MHz

AM tuner section:
Tuning range
North American model:
530 – 1,710 kHz (with 10 kHz tuning interval)
531 – 1,710 kHz (with 9 kHz tuning interval)
Australian model:
531 – 1,710 kHz (with 9 kHz tuning interval)
530 – 1,710 kHz (with 10 kHz tuning interval)
Intermediate frequency: 450 kHz
UK model:
531 – 1,602 kHz (with 9 kHz tuning interval)
Intermediate frequency: 450 kHz

General

Power requirements:
North American model: AC 120 V, 60 Hz
Australian model: AC 230 – 240 V, 50/60 Hz
UK model: AC 230 V, 50/60 Hz

Power consumption:

HCD-EC78P
USA model: 210 W
Canadian model: 270 VA
UK model: 160 W
0.5 W (in Power Saving Mode)

HCD-EC68P
110 W

Dimensions (w/h/d) (excl. speakers):
Approx. 200 × 306 × 415 mm

Mass (excl. speakers):

HCD-EC78P: US and Canadian models
Approx. 5.8 kg

HCD-EC78P: UK model
Approx. 6.1 kg

HCD-EC68P
Approx. 4.7 kg

Design and specifications are subject to change without notice.

COMPACT DISC RECEIVER

9-889-053-01
2008C05-1
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Sony Corporation
Audio Business Group
Published by Sony Techno Create Corporation

SONY®

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This appliance is classified as a CLASS 1 LASER product. This marking is located on the rear exterior.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

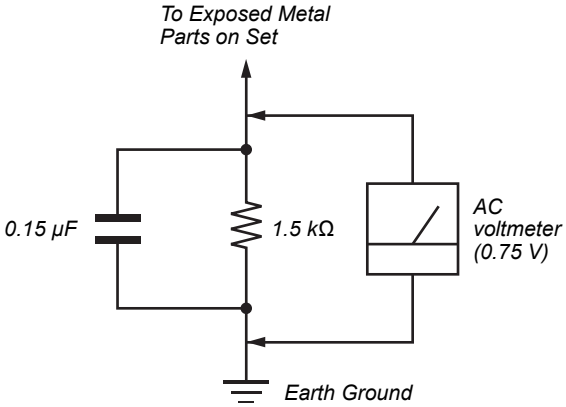

Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONET WARNING!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COM- POSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pickup block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 °C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscou-s (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

RELEASING THE DISC TRAY LOCK

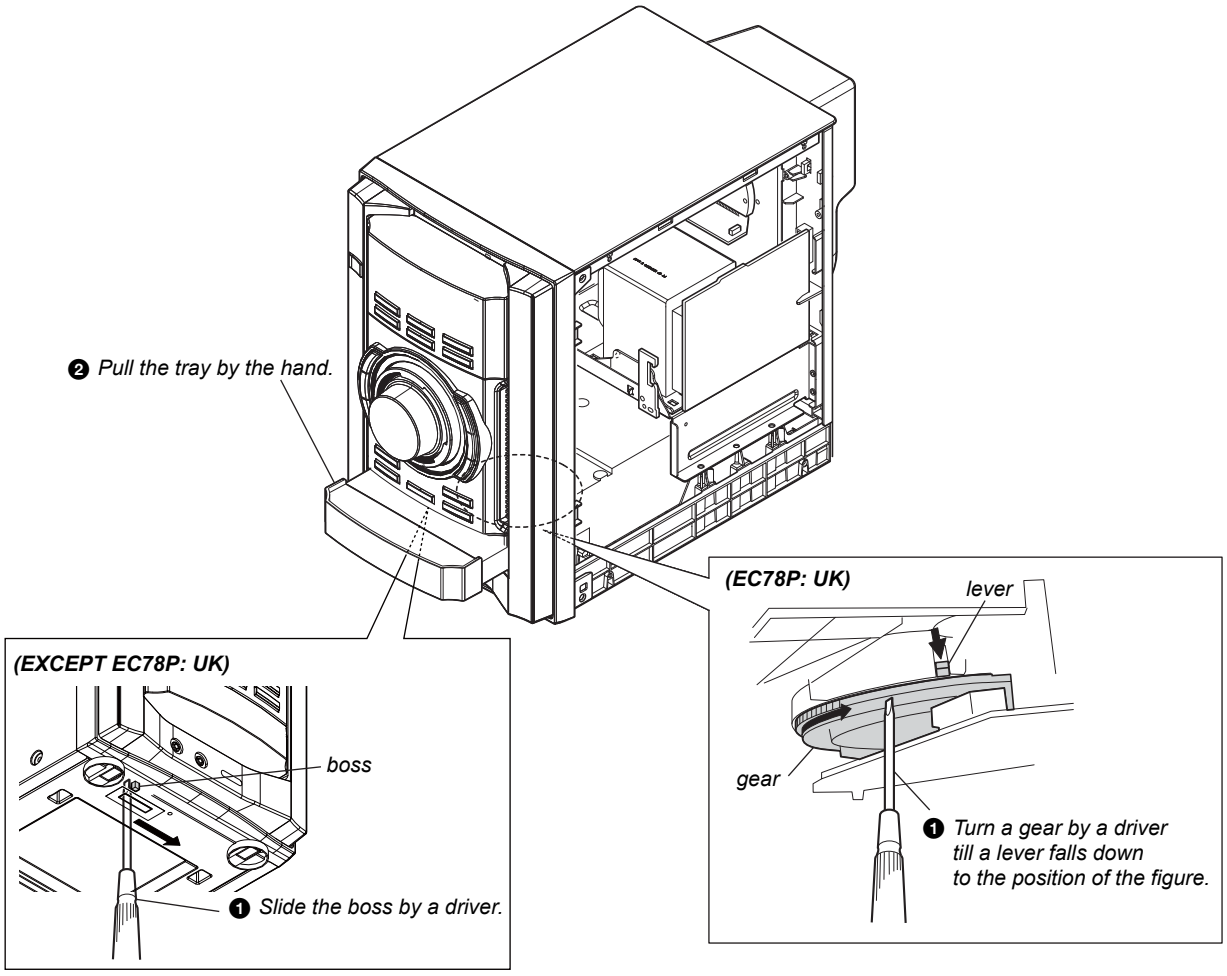
The disc tray lock function for the antitheft of an demonstration disc in the store is equipped.

Releasing Procedure:

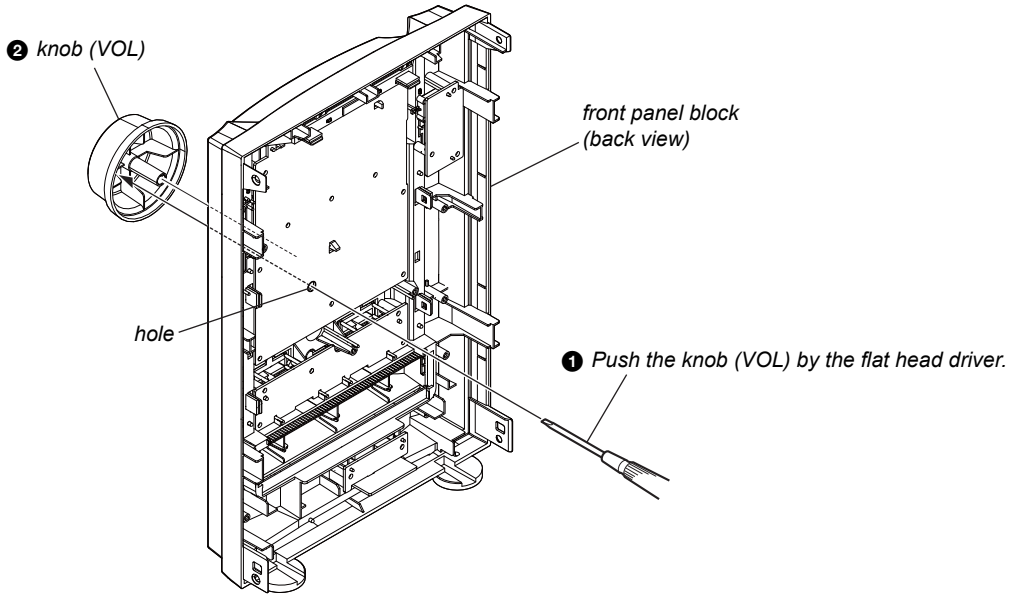
1. Press [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. While pressing the [■] button, press the [⏏] button for more 5 seconds).
4. The message “UNLOCKED” is displayed and the disc tray is unlocked.

Note: When “LOCKED” is displayed, the slot lock is not released by turning power on/off with the [I/⏻] button.

HOW TO OPEN THE TRAY WHEN POWER SWITCH TURN OFF

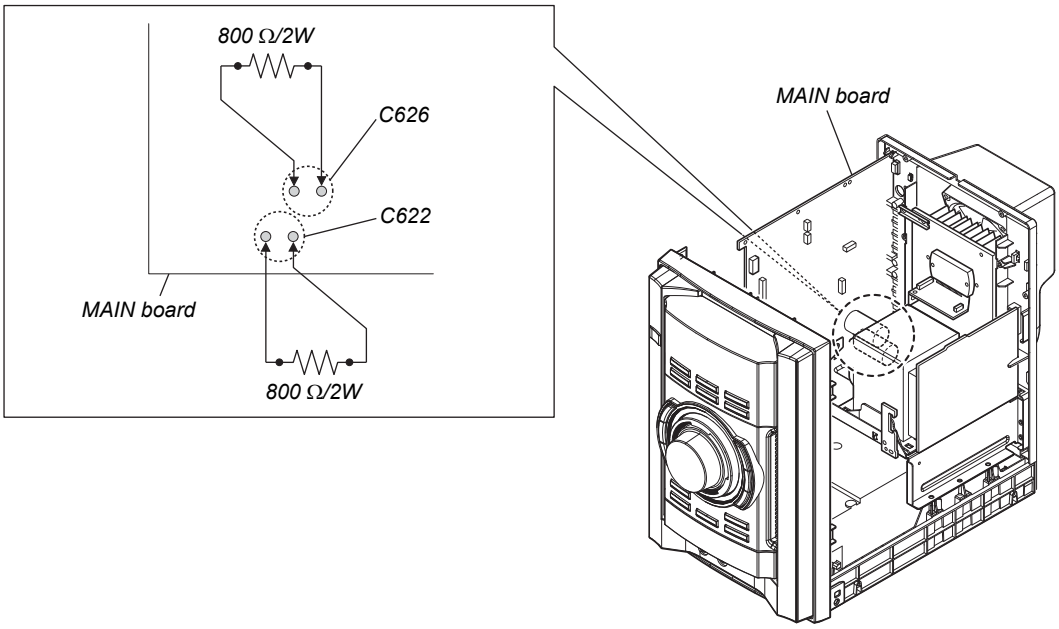

❷ Pull the tray by the hand.
(EXCEPT EC78P: UK)
boss
❶ Slide the boss by a driver.
(EC78P: UK)
lever
gear
❶ Turn a gear by a driver till a lever falls down to the position of the figure.

HOW TO REMOVE THE KNOB (VOL)

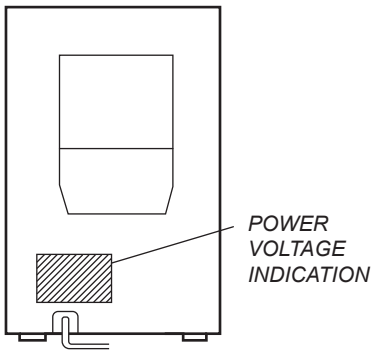


CAPACITOR DISCHARGE FOR ELECTRIC SHOCK PREVENTION

In checking the MAIN board, make a capacitor discharge of C622 and C626 for electric shock prevention.



MODEL IDENTIFICATION
– Back Panel –



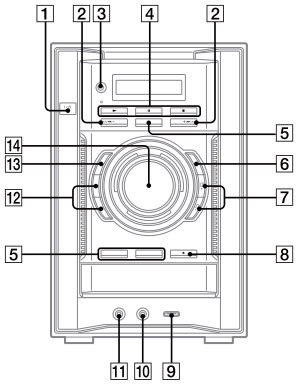
Model	Power Voltage Indication
EC68P: US/EC78P: US and Canadian models	AC 120 V, 60 Hz
EC68P: Australian model	AC 230 - 240 V, 50/60 Hz
EC78P: UK model	AC 230 V, 50/60 Hz

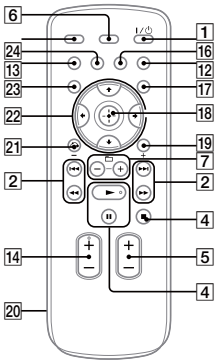
SECTION 2
GENERAL

This section is extracted from instruction manual.

HCD-EC68P/EC78P: US and Canadian models:

Basic Operations



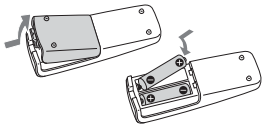


This manual mainly explains operations using the remote, but the same operations can also be performed using the buttons on the unit having the same or similar names.

Before using the system

To use the remote

Slide and remove the battery compartment lid 20, and insert the two R6 (size AA) batteries (supplied), ⊖ side first, matching the polarities shown below.



Notes on using the remote

- With normal use, the batteries should last for about six months.
- Do not mix an old battery with a new one or mix different types of batteries.
- If you do not use the remote for a long period of time, remove the batteries to avoid damage from battery leakage and corrosion.
- Batteries installed devices shall not be exposed to excessive heat such as sunshine, fire or the like.

To set the clock

1 Turn on the system.

Press I/⏻ (on/standby) 1 to turn on the system.

2 Select the clock set mode.

Press TIMER MENU 17. The hour indication flashes. If "PLAY SET" flashes, press ↑/↓ 22 repeatedly to select "CLOCK," and then press ⊕ (enter) 18.

3 Set the time.

Press ↑/↓ 22 repeatedly to set the hour, then press ⊕ (enter) 18. The minute indication flashes.

Use the same procedure to set the minutes.

Note

The clock settings are lost when you disconnect the power cord or if a power failure occurs.

Adjusting the sound

To adjust the volume

Press VOLUME +/– (or turn the VOLUME control on the unit) 14.

To add a sound effect

To	Press
Generate a more dynamic sound (Dynamic Sound Generator X-tra)	DSGX 12 on the unit.
Set the sound effect	EQ 12.

Playing a CD/MP3 disc

1 Select the CD function.

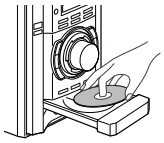
Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly.

2 Place a disc.

Press ⏏ (open/close) 8 on the unit, and place a disc with the label side up on the disc tray.

To close the disc tray, press ⏏ (open/close) 8 on the unit.

Do not force the disc tray closed with your finger, as this may damage the unit.



3 Start playback.

Press ► (play) 4.

To	Press
Pause playback	❚❚ (pause) 4. To resume play, press the button again.
Stop playback	■ (stop) 4.
Select a folder on an MP3 disc	🗀 +/– (select folder) 7.
Select a track or file	I◄◄/►►I (go back/go forward) (or I◄◄/►►I on the unit) 2.
Find a point in a track or file	Hold down ◄◄/►► (rewind/fast forward) 2 during playback, and release the button at the desired point.
Select Repeat Play	REPEAT 24 repeatedly until "REP" or "REP1" appears.

To change the play mode

Press PLAY MODE 13 repeatedly while the player is stopped. You can select normal play (no display or "🗀 " for all MP3 files in the folder on the disc), shuffle play ("SHUF" or "🗀 SHUF*" for folder shuffle), or program play ("PGM").

* When playing a CD-DA disc, 🗀 (SHUF) Play performs the same operation as normal (SHUF) Play.

Notes on Repeat Play

- All tracks or files on a disc are played repeatedly up to five times.
- "REP1" indicates that a single track or file is repeated until you stop it.

Notes on playing MP3 discs

- Do not save other types of tracks or files or unnecessary folders on a disc that has MP3 files.
- Folders that have no MP3 files are skipped.
- MP3 files are played back in the order that they are recorded onto the disc.
- The system can only play MP3 files that have a file extension of ".MP3".
- If there are files on the disc that have the ".MP3" file extension, but that are not MP3 files, the unit may produce noise or may malfunction.
- The maximum number of:
  - folders is 150 (including the root folder).
  - MP3 files is 255.
  - MP3 files and folders that can be contained on a single disc is 300.
  - folder levels (the tree structure of files) is 8.
- Compatibility with all MP3 encoding/writing software, recording device, and recording media cannot be guaranteed. Incompatible MP3 discs may produce noise or interrupted audio or may not play at all.

Notes on playing multisession discs

- If the disc begins with a CD-DA (or MP3) session, it is recognized as a CD-DA (or MP3) disc, and playback continues until another session is encountered.
- A disc with a mixed CD format is recognized as a CD-DA (audio) disc.

Listening to the radio

1 Select "TUNER FM" or "TUNER AM."

Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly.

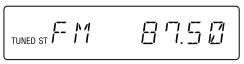
2 Select the tuning mode.

Press TUNING MODE 13 repeatedly until "AUTO" appears.

3 Tune in the desired station.

Press +/– (or TUNING +/– on the unit) 2.

Scanning stops automatically when a station is tuned in, and then "TUNED" and "ST" (for stereo programs) appear.



To stop automatic scanning

Press ■ (stop) 4.

To tune in a station with a weak signal

If "TUNED" does not appear and the scanning does not stop, press TUNING MODE 13 repeatedly until "MANUAL" appears, and then press +/– (or TUNING +/– on the unit) 2 repeatedly to tune in the desired station.

To reduce static noise on a weak FM stereo station

Press FM MODE 24 repeatedly until "MONO" appears to turn off stereo reception.

Changing the display

To	Press
Change information on the display*	DISPLAY 6 repeatedly when the system is turned on.
Change Display mode (See below.)	DISPLAY 6 repeatedly when the system is turned off.

* For example, you can view CD/MP3 disc information, such as;
  - track or file number during normal play.
  - track or file name ("♫") during normal play.
  - artist name ("👤") during normal play.
  - album or folder name ("🗀") during normal play.
  - total playing time while the player is stopped.

The system offers the following display modes.

Display mode	When the system is off,
Power Saving Mode[1]	The display is turned off to conserve power. The timer and clock continue to operate.
Clock[2]	The clock is displayed.

[1] You cannot set the clock in Power Saving Mode.
[2] The clock display automatically turns to Power Saving Mode after eight seconds.

Notes on the display information

- Characters that cannot be displayed appear as "_".
- The following are not displayed;
  - total playing time for an MP3 disc.
  - remaining playing time for an MP3 file.
- The following are not displayed correctly;
  - elapsed playing time of an MP3 file encoded using VBR (variable bit rate).
  - folder and file names that do not follow either ISO9660 Level 1, Level 2 or Joliet in the expansion format.
- The following are displayed;
  - total playing time for a CD-DA disc during normal play.
  - remaining playing time for a track.
  - ID3 tag information for MP3 files when ID3 version 1 and version 2 tags are used (ID3 version 2 tag information display has priority when both ID3 version 1 and version 2 tags are used for a single MP3 file).
  - up to 15 characters of ID3 tag information using uppercase letters (A to Z), numbers (0 to 9), and symbols (" < > * + , – / @ [\ ] _).

Using optional audio components

To connect an optional headphones

Connect headphones to the PHONES jack 11 on the unit.

To connect an optional component

Connect additional audio source components to the AUDIO IN jack 10 on the unit using an analog audio cord (not supplied). Turn down the volume on the system, and then select the AUDIO IN function.

To connect a DIGITAL MEDIA PORT adaptor

Connect the DIGITAL MEDIA PORT adaptor to the DMPORT 9 on the unit. You need to connect the DIGITAL MEDIA PORT adaptor to an optional audio device (portable audio player, etc.).

Notes on DIGITAL MEDIA PORT adaptor

- Available DIGITAL MEDIA PORT adaptors vary in each area.
- Do not connect an adaptor other than the DIGITAL MEDIA PORT adaptor.
- Do not connect or disconnect the DIGITAL MEDIA PORT adaptor to/from the DMPORT 9 while the system is on.
- When using a DIGITAL MEDIA PORT adaptor that has video output function, connect the adaptor directly to the TV.
- For details about the DIGITAL MEDIA PORT adaptor, refer to the operating instructions supplied with your DIGITAL MEDIA PORT adaptor.

Other Operations

Creating your own CD program (Program Play)

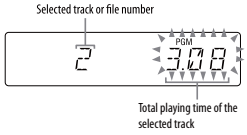
Use buttons on the remote to create your own program.

1 Press FUNCTION +/– 5 repeatedly to select the CD function.

2 Press PLAY MODE 13 repeatedly until "PGM" appears while the player is stopped.

3 Press ⏮/⏭ 2 repeatedly until the desired track number appears.

When programming MP3 files, press 🗀 +/– 7 repeatedly to select the desired folder, and then select the desired file.



4 Press ⓘ 18 to add the track or file to the program.

5 Repeat steps 3 through 5 to program additional tracks or files, up to a total of 25 tracks or files.

6 To play your program of tracks or files, press ► 4.

The program remains available until you open the disc tray. To play the same program again, select the CD function, and then press ► 4.

To cancel Program Play
Press PLAY MODE 13 repeatedly until "PGM" disappears while the player is stopped.

To delete the last track or file of the program
Press CLEAR 16 while the player is stopped.

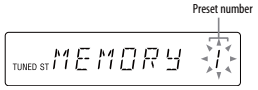
To view program information, such as total track number of the program
Press DISPLAY 6 repeatedly.

Presetting radio stations

You can preset your favorite radio stations and tune them in instantly by selecting the corresponding preset number.

1 Tune in the desired station (See "Listening to the radio").

2 Press TUNER MEMORY 23.



3 Press +/– (or TUNING +/– on the unit) 2 repeatedly to select your desired preset number.

If another station is already assigned to the selected preset number, the station is replaced by the new stations.

4 Press ⓘ 18.

5 Repeat steps 1 through 4 to store other stations.

You can preset up to 20 FM and 10 AM stations. The preset stations are retained for about half a day even if you disconnect the power cord or if a power failure occurs.

6 To call up a preset radio station, press TUNING MODE 13 repeatedly until "PRESET" appears, and then press +/– (or TUNING +/– on the unit) 2 repeatedly to select the desired preset number.

Using the timers

The system offers two timer functions. If you use both timers, the Sleep Timer has priority.

Use buttons on the remote to use the timer functions.

Sleep Timer:
You can fall asleep to music. This function works even if the clock is not set.
Press SLEEP 25 repeatedly. If you select "AUTO," the system automatically turns off after the current disc stops or in 100 minutes.

Play Timer:
You can wake up to CD or tuner at a preset time.

Make sure you have set the clock.

1 Prepare the sound source.

Press VOLUME +/– 14 to adjust the volume.

To start from a specific CD track or MP3 file, create your own CD program.

2 Press TIMER MENU 17.

3 Press ↑/↓ 22 repeatedly to select "PLAY SET," then press ⓘ 18.

"ON TIME" appears, and the hour indication flashes.

4 Set the time to start playback.

Press ↑/↓ 22 repeatedly to set the hour, then press ⓘ 18.

The minute indication flashes. Use the procedure above to set the minutes.

5 Use the same procedure as in step 4 to set the time to stop playback.

6 Select the sound source.

Press ↑/↓ 22 repeatedly until the sound source you want appears, and then press ⓘ 18. The display shows the timer settings.

7 Press I/⏻ 1 to turn off the system.

If the system is on at the preset time, the Play Timer will not play.

To activate or check the timer again

1 Press TIMER MENU 17.

"SELECT" flashes in the display.

2 Press ⓘ 18.

3 Press ↑/↓ 22 repeatedly to select "PLAY SEL," then press ⓘ 18.

To cancel the timer
Repeat the same procedure as above until "OFF" appears in step 3, and then press ⓘ 18.

To change the setting
Start over from step 1.

Tip
The Play Timer setting remains as long as the setting is not canceled manually.

Troubleshooting

1 Make sure the power cord and speaker cords are correctly and firmly connected.

2 Find your problem in the checklist below, and take the indicated corrective action.

If the issue persists, contact your nearest Sony dealer.

If "PROTECT" appears on the display

Immediately unplug the power cord, and check the following items after "PROTECT" disappears.
- Are the + and – speaker cords short-circuited?
- Is anything blocking the ventilation holes on the top or back of the system?

After you have checked these above items and found to be all right, reconnect the power cord, and turn on the system. If the issue persists, contact your nearest Sony dealer.

General

The system does not turn on.
- Is the power cord plugged in?

There is no sound.
- Are the + and – speaker cords short-circuited?
- Are you using only the supplied speakers?
- Is anything blocking the ventilation holes on the top or back of the system?

Sound comes from one channel, or the left and right volumes are unbalanced.
- Place the speakers as symmetrically as possible.
- Connect only the supplied speakers.

Severe hum or noise.
- Move the system away from sources of noise.
- Connect the system to a different wall socket.
- Install a noise filter (available separately) to the power cord.

The remote does not function.
- Remove any obstacles between the remote and the remote sensor 3 on the unit, and position the unit away from fluorescent lights.
- Point the remote at the system's sensor.
- Move the remote closer to the system.

CD/MP3 player

The sound skips, or the disc will not play.
- Wipe the disc clean, and replace it.
- Move the system to a location away from vibration (for example, on top of a stable stand).
- Move the speakers away from the system, or place them on separate stands. At high volume, speaker vibration may cause the sound to skip.

Play does not start from the first track.
- Return to Normal Play by pressing PLAY MODE 13 repeatedly until both "PGM" and "SHUF" disappear.

Starting playback takes more time than usual.

The following discs take a longer time to start playback.
- a disc recorded with a complicated tree structure.
- a disc recorded in multisession mode.
- a disc that has not been finalized (a disc to which data can be added).
- a disc that has many folders.

The disc tray does not open and "LOCKED" appears.
- Contact your Sony dealer or local authorized Sony service facility.

Tuner

Severe hum or noise, or stations cannot be received. ("TUNED" or "ST" flashes on the display.)
- Connect the antenna properly.
- Find a location and an orientation that provide good reception, and then set up the antenna again.
- Keep the antennas away from the speaker cords and the power cord to avoid picking up noise.
- Turn off nearby electrical equipment.

To change the AM tuning interval
The AM tuning interval is factory-preset to 9 kHz or 10 kHz.
Use buttons on the unit to change the AM tuning interval.

1 Tune in any AM station, and then turn off the system.

2 Press DISPLAY 6 to display the clock.

3 While holding down TUNING + 2, press I/⏻ 1.

All the AM preset stations are erased. To reset the interval to the factory preset, repeat the procedure.

To improve tuner reception
Turn off CD player power by using the CD power management function. By default, CD power is turned on.

1 Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly to select the CD function.

2 Press I/⏻ 1 to turn off the system.

3 After "STANDBY" stops flashing, press DISPLAY 6 to display the clock, and then press I/⏻ 1 while holding down ■ 4.

"CD POWER OFF" appears. With CD player power turned off, disc access time is increased. To turn on CD player power, repeat the procedure until "CD POWER ON" appears.

To reset the system to factory settings
If the system still does not operate properly, reset the system to factory settings.
Use buttons on the unit to reset the unit to its factory default settings.

1 Disconnect and reconnect the power cord, and then turn on the system.

2 Press ■ 4, FUNCTION 5, and I/⏻ 1 at the same time.

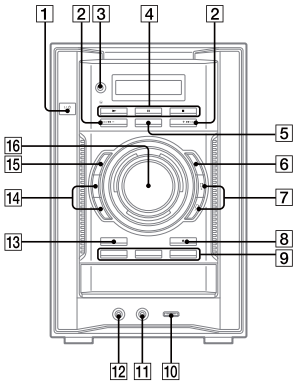
All user-configured settings, such as preset radio stations, timer, and the clock, are deleted.

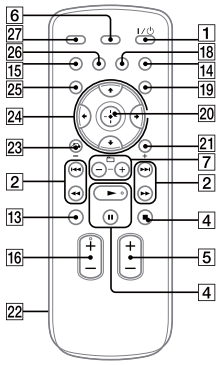
Messages

CANNOT LOCK : The system cannot be locked after you have done the procedure of "When carrying this system."
COMPLETE : The preset operation ended normally.
FULL : You tried to program more than 25 tracks or files (steps).
LOCKED : The disc tray does not open. Contact your nearest Sony dealer.
NO DISC : There is no disc in the player, or you have loaded a disc that cannot be played.
NO STEP : All of the programmed tracks have been erased.
OVER : You have reached the end of the disc while pressing ►► 2 during playback or pause.
PUSH STOP : You pressed PLAY MODE 13 during playback.
PROTECT : The following causes can be considered:
– Speaker cords may be short-circuited.
– The ventilation holes may be blocked.
See "If "PROTECT" appears on the display" to check what to do if this message appears.
READING : The system is reading information from the disc. Some buttons are not available.
TIME NG : The Play Timer start and end times are set to the same time.

HCD-EC78P: UK model:

Basic Operations



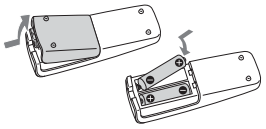


This manual mainly explains operations using the remote, but the same operations can also be performed using the buttons on the unit having the same or similar names.

Before using the system

To use the remote

Slide and remove the battery compartment lid 22, and insert the two R6 (size AA) batteries (supplied), ⊖ side first, matching the polarities shown below.



Notes on using the remote

- With normal use, the batteries should last for about six months.
- Do not mix an old battery with a new one or mix different types of batteries.
- If you do not use the remote for a long period of time, remove the batteries to avoid damage from battery leakage and corrosion.
- Batteries installed devices shall not be exposed to excessive heat such as sunshine, fire or the like.

To set the clock

1 Turn on the system.

Press I/⏻ (on/standby) 1 to turn on the system.

2 Select the clock set mode.

Press TIMER MENU 19. The hour indication flashes. If "PLAY SET" flashes, press ♦/♦ 24 repeatedly to select "CLOCK," and then press ⊙ (enter) 20.

3 Set the time.

Press ♦/♦ 24 repeatedly to set the hour, then press ⊙ (enter) 20. The minute indication flashes.

Use the same procedure to set the minutes.

Note

The clock settings are lost when you disconnect the power cord or if a power failure occurs.

Adjusting the sound

To adjust the volume

Press VOLUME +/– (or turn the VOLUME control on the unit) 16.

To add a sound effect

To	Press
Generate a more dynamic sound (Dynamic Sound Generator X-tra)	DSGX 14 on the unit.
Set the sound effect	EQ 14.

Playing a CD/MP3 disc

1 Select the CD function.

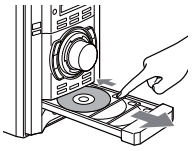
Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly.

2 Place a disc.

Press ⏏ (open/close) 8 on the unit, and place a disc with the label side up on the disc tray. To place additional discs, slide the disc tray with your finger as shown below.

To close the disc tray, press ⏏ (open/close) 8 on the unit.

Do not force the disc tray closed with your finger, as this may damage the unit.



3 Select a disc.

If the discs are currently stopped, press DISC SKIP 13. To change discs while in other functions, press DISC 1 – 3 9 on the unit.

4 Start playback.

Press ► (play) 4.

To exchange other discs during playback, press EX-CHANGE 13 on the unit.

To	Press
Pause playback	❚❚ (pause) 4. To resume play, press the button again.
Stop playback	■ (stop) 4.
Select a folder on an MP3 disc	🗀 +/– (select folder) 7.
Select a track or file	I◄◄ /►►I (go back/go forward) (or I◄◄/►►I on the unit) 2.
Find a point in a track or file	Hold down ◄◄/►► (rewind/fast forward) 2 during playback, and release the button at the desired point.
Select Repeat Play	REPEAT 26 repeatedly until "REP" or "REP1" appears.

To change the play mode

Press PLAY MODE 15 repeatedly while the player is stopped. You can select normal play (no display for all discs or "1 DISC" for a disc or "🗀" for all MP3 files in the folder on the disc), shuffle play ("SHUF" for all discs shuffle, "1 DISC SHUF" for one disc shuffle or "🗀 SHUF*" for folder shuffle), or program play ("PGM").

* When playing a CD-DA disc, 🗀 (SHUF) Play performs the same operation as 1 DISC (SHUF) Play.

Notes on Repeat Play

- All tracks or files on a disc are played repeatedly up to five times.
- You cannot select "REP" and "SHUF" (all discs shuffle) at the same time.
- "REP1" indicates that a single track or file is repeated until you stop it.

Notes on playing MP3 discs

- Do not save other types of tracks or files or unnecessary folders on a disc that has MP3 files.
- Folders that have no MP3 files are skipped.
- MP3 files are played back in the order that they are recorded onto the disc.
- The system can only play MP3 files that have a file extension of ".MP3".
- If there are files on the disc that have the ".MP3" file extension, but that are not MP3 files, the unit may produce noise or may malfunction.
- The maximum number of:
  - folders is 150 (including the root folder).
  - MP3 files is 255.
  - MP3 files and folders that can be contained on a single disc is 300.
  - folder levels (the tree structure of files) is 8.
- Compatibility with all MP3 encoding/writing software, recording device, and recording media cannot be guaranteed. Incompatible MP3 discs may produce noise or interrupted audio or may not play at all.

Notes on playing multisession discs

- If the disc begins with a CD-DA (or MP3) session, it is recognized as a CD-DA (or MP3) disc, and playback continues until another session is encountered.
- A disc with a mixed CD format is recognized as a CD-DA (audio) disc.

Listening to the radio

1 Select "TUNER FM" or "TUNER AM."

Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly.

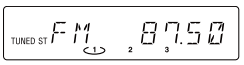
2 Select the tuning mode.

Press TUNING MODE 15 repeatedly until "AUTO" appears.

3 Tune in the desired station.

Press +/– (or TUNING +/ on the unit) 2.

Scanning stops automatically when a station is tuned in, and then "TUNED" and "ST" (for stereo programs) appear.



To stop automatic scanning

Press ■ (stop) 4.

To tune in a station with a weak signal

If "TUNED" does not appear and the scanning does not stop, press TUNING MODE 15 repeatedly until "MANUAL" appears, and then press +/– (or TUNING +/– on the unit) 2 repeatedly to tune in the desired station.

To reduce static noise on a weak FM stereo station

Press FM MODE 26 repeatedly until "MONO" appears to turn off stereo reception.

Changing the display

To	Press
Change information on the display*	DISPLAY 6 repeatedly when the system is turned on.
Change Display mode (See below.)	DISPLAY 6 repeatedly when the system is turned off.

* For example, you can view CD/MP3 disc information, such as;
  - track or file number during normal play.
  - track or file name ("♫") during normal play.
  - artist name ("👤") during normal play.
  - album or folder name ("🗀") during normal play.
  - total playing time while the player is stopped.

The system offers the following display modes.

Display mode	When the system is off,
Power Saving Mode[1]	The display is turned off to conserve power. The timer and clock continue to operate.
Clock[2]	The clock is displayed.

[1] You cannot set the clock in Power Saving Mode.

[2] The clock display automatically turns to Power Saving Mode after eight seconds.

Notes on the display information

- Characters that cannot be displayed appear as "_".
- The following are not displayed;
  - total playing time for an MP3 disc.
  - remaining playing time for an MP3 file.
- The following are not displayed correctly;
  - elapsed playing time of an MP3 file encoded using VBR (variable bit rate).
  - folder and file names that do not follow either ISO9660 Level 1, Level 2 or Joliet in the expansion format.
- The following are displayed;
  - total playing time for a CD-DA disc when the play mode is "1 DISC".
  - remaining playing time for a track.
  - ID3 tag information for MP3 files when ID3 version 1 and version 2 tags are used (ID3 version 2 tag information display has priority when both ID3 version 1 and version 2 tags are used for a single MP3 file).
  - up to 15 characters of ID3 tag information using uppercase letters (A to Z), numbers (0 to 9), and symbols ('< > * + , – / @ [\ ] _).

Using optional audio components

To connect an optional headphones

Connect headphones to the PHONES jack 12 on the unit.

To connect an optional component

Connect additional audio source components to the AUDIO IN jack 11 on the unit using an analog audio cord (not supplied). Turn down the volume on the system, and then select the AUDIO IN function.

To connect a DIGITAL MEDIA PORT adaptor

Connect the DIGITAL MEDIA PORT adaptor to the DMPORT 10 on the unit. You need to connect the DIGITAL MEDIA PORT adaptor to an optional audio device (portable audio player, etc.).

Notes on DIGITAL MEDIA PORT adaptor

- Available DIGITAL MEDIA PORT adaptors vary in each area.
- Do not connect an adaptor other than the DIGITAL MEDIA PORT adaptor.
- Do not connect or disconnect the DIGITAL MEDIA PORT adaptor to/from the DMPORT 10 while the system is on.
- When using a DIGITAL MEDIA PORT adaptor that has video output function, connect the adaptor directly to the TV.
- For details about the DIGITAL MEDIA PORT adaptor, refer to the operating instructions supplied with your DIGITAL MEDIA PORT adaptor.

Other Operations

Creating your own CD program (Program Play)

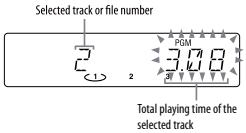
Use buttons on the remote to create your own program.

1 Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly to select the CD function.

2 Press PLAY MODE 15 repeatedly until "PGM" appears while the player is stopped.

3 Press DISC SKIP 13 to select a disc.

4 Press ⏮/⏭ (or ⏮/⏭ on the unit) 2 repeatedly until the desired track number appears.
When programming MP3 files, press 📁 +/– 7 repeatedly to select the desired folder, and then select the desired file.



5 Press ⊕ 20 to add the track or file to the program.

6 Repeat steps 3 through 5 to program additional tracks or files, up to a total of 25 tracks or files.

7 To play your program of tracks or files, press ▶ 4.
The program remains available until you open the disc tray. To play the same program again, select the CD function, and then press ▶ 4.

To cancel Program Play
Press PLAY MODE 15 repeatedly until "PGM" disappears while the player is stopped.

To delete the last track or file of the program
Press CLEAR 18 while the player is stopped.

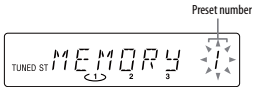
To view program information, such as total track number of the program
Press DISPLAY 6 repeatedly.

Presetting radio stations

You can preset your favorite radio stations and tune them in instantly by selecting the corresponding preset number.

1 Tune in the desired station (See "Listening to the radio").

2 Press TUNER MEMORY 25.



3 Press +/– (or TUNING +/– on the unit) 2 repeatedly to select your desired preset number.
If another station is already assigned to the selected preset number, the station is replaced by the new stations.

4 Press ⊕ 20.

5 Repeat steps 1 through 4 to store other stations.
You can preset up to 20 FM and 10 AM stations. The preset stations are retained for about half a day even if you disconnect the power cord or if a power failure occurs.

6 To call up a preset radio station, press TUNING MODE 15 repeatedly until "PRESET" appears, and then press +/– (or TUNING +/– on the unit) 2 repeatedly to select the desired preset number.

Using the timers

The system offers two timer functions. If you use both timers, the Sleep Timer has priority.

Use buttons on the remote to use the timer functions.

Sleep Timer:
You can fall asleep to music. This function works even if the clock is not set.
Press SLEEP 27 repeatedly. If you select "AUTO," the system automatically turns off after the current disc stops or in 100 minutes.

Play Timer:
You can wake up to CD or tuner at a preset time.

Make sure you have set the clock.

1 Prepare the sound source.
Press VOLUME +/– (or turn VOLUME on the unit) 16 to adjust the volume.
To start from a specific CD track or MP3 file, create your own CD program.

2 Press TIMER MENU 19.

3 Press ↑/↓ 24 repeatedly to select "PLAY SET," then press ⊕ 20.
"ON TIME" appears, and the hour indication flashes.

4 Set the time to start playback.
Press ↑/↓ 24 repeatedly to set the hour, then press ⊕ 20.
The minute indication flashes. Use the procedure above to set the minutes.

5 Use the same procedure as in step 4 to set the time to stop playback.

6 Select the sound source.
Press ↑/↓ 24 repeatedly until the sound source you want appears, and then press ⊕ 20. The display shows the timer settings.

7 Press I/⏻ 1 to turn off the system.
If the system is on at the preset time, the Play Timer will not play.

To activate or check the timer again

1 Press TIMER MENU 19.
"SELECT" flashes.

2 Press ⊕ 20.

3 Press ↑/↓ 24 repeatedly to select "PLAY SEL," and then press ⊕ 20.

To cancel the timer
Repeat the same procedure as above until "OFF" appears in step 3, and then press ⊕ 20.

To change the setting
Start over from step 1.

Tip
The Play Timer setting remains as long as the setting is not canceled manually.

Troubleshooting

1 Make sure the power cord and speaker cords are correctly and firmly connected.

2 Find your problem in the checklist below, and take the indicated corrective action.
If the issue persists, contact your nearest Sony dealer.

If "PROTECT" appears on the display

Immediately unplug the power cord, and check the following items after "PROTECT" disappears.
- Are the + and – speaker cords short-circuited?
- Is anything blocking the ventilation holes on the top or back of the system?

After you have checked these above items and found to be all right, reconnect the power cord, and turn on the system. If the issue persists, contact your nearest Sony dealer.

General

The system does not turn on.
- Is the power cord plugged in?

There is no sound.
- Are the + and – speaker cords short-circuited?
- Are you using only the supplied speakers?
- Is anything blocking the ventilation holes on the top or back of the system?

Sound comes from one channel, or the left and right volumes are unbalanced.
- Place the speakers as symmetrically as possible.
- Connect only the supplied speakers.

Severe hum or noise.
- Move the system away from sources of noise.
- Connect the system to a different wall socket.
- Install a noise filter (available separately) to the power cord.

The remote does not function.
- Remove any obstacles between the remote and the remote sensor 3 on the unit, and position the unit away from fluorescent lights.
- Point the remote at the system's sensor.
- Move the remote closer to the system.

CD/MP3 player

The sound skips, or the disc will not play.
- Wipe the disc clean, and replace it.
- Move the system to a location away from vibration (for example, on top of a stable stand).
- Move the speakers away from the system, or place them on separate stands. At high volume, speaker vibration may cause the sound to skip.

Play does not start from the first track.
- Return to Normal Play by pressing PLAY MODE 15 repeatedly until both "PGM" and "SHUF" disappear.

Starting playback takes more time than usual.
- The following discs take a longer time to start playback.
  – a disc recorded with a complicated tree structure.
  – a disc recorded in multisession mode.
  – a disc that has not been finalized (a disc to which data can be added).
  – a disc that has many folders.

The disc tray does not open and "LOCKED" appears.
- Contact your Sony dealer or local authorized Sony service facility.

Tuner

Severe hum or noise, or stations cannot be received. ("TUNED" or "ST" flashes on the display.)
- Connect the antenna properly.
- Find a location and an orientation that provide good reception, and then set up the antenna again.
- Keep the antennas away from the speaker cords and the power cord to avoid picking up noise.
- Turn off nearby electrical equipment.

To change the AM tuning interval
The AM tuning interval is factory-preset to 9 kHz or 10 kHz.
Use buttons on the unit to change the AM tuning interval.

1 Tune in any AM station, and then turn off the system.

2 Press DISPLAY 6 to display the clock.

3 While holding down TUNING + 2, press I/⏻ 1.
All the AM preset stations are erased. To reset the interval to the factory preset, repeat the procedure.

To improve tuner reception
Turn off CD player power by using the CD power management function. By default, CD power is turned on.

1 Press FUNCTION +/– (or FUNCTION on the unit) 5 repeatedly to select the CD function.

2 Press I/⏻ 1 to turn off the system.

3 After "STANDBY" stops flashing, press DISPLAY 6 to display the clock, and then press I/⏻ 1 while holding down ■ 4.
"CD POWER OFF" appears. With CD player power turned off, disc access time is increased. To turn on CD player power, repeat the procedure until "CD POWER ON" appears.

To reset the system to factory settings
If the system still does not operate properly, reset the system to factory settings.
Use buttons on the unit to reset the unit to its factory default settings.

1 Disconnect and reconnect the power cord, and then turn on the system.

2 Press ■ 4, FUNCTION 5, and I/⏻ 1 at the same time.
All user-configured settings, such as preset radio stations, timer, and the clock, are deleted.

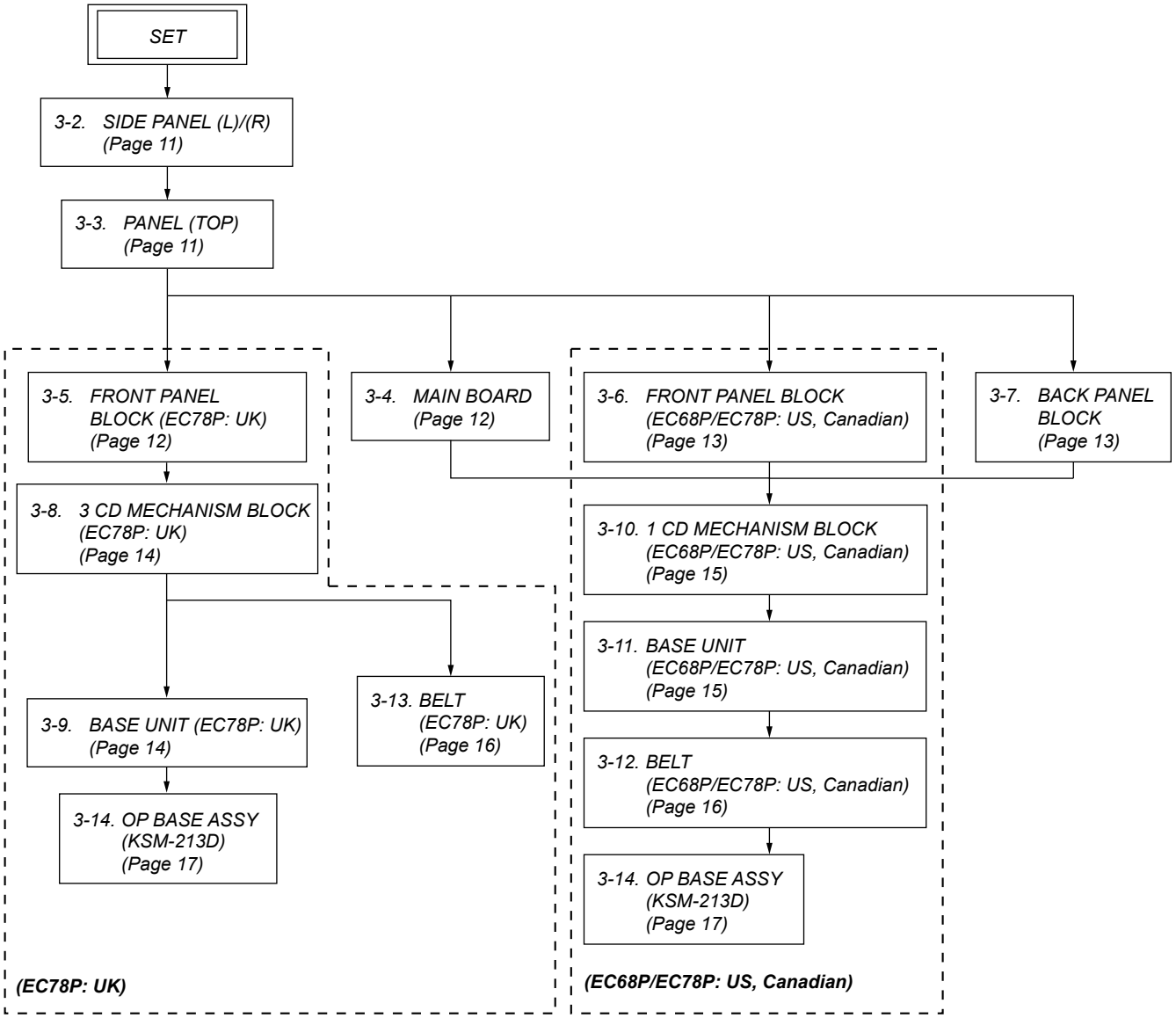
Messages

CANNOT LOCK : The system cannot be locked after you have done the procedure of "When carrying this system."
COMPLETE : The preset operation ended normally.
FULL : You tried to program more than 25 tracks or files (steps).
LOCKED : The disc tray does not open. Contact your nearest Sony dealer.
NO DISC : There is no disc in the player, or you have loaded a disc that cannot be played.
NO STEP : All of the programmed tracks have been erased.
OVER : You have reached the end of the disc while pressing ▶▶ 2 during playback or pause.
PUSH STOP : You pressed PLAY MODE 15 during playback.
PROTECT : The following causes can be considered:
– Speaker cords may be short-circuited.
– The ventilation holes may be blocked.
See "If "PROTECT" appears on the display" to check what to do if this message appears.
READING : The system is reading information from the disc. Some buttons are not available.
TIME NG : The Play Timer start and end times are set to the same time.

SECTION 3
DISASSEMBLY

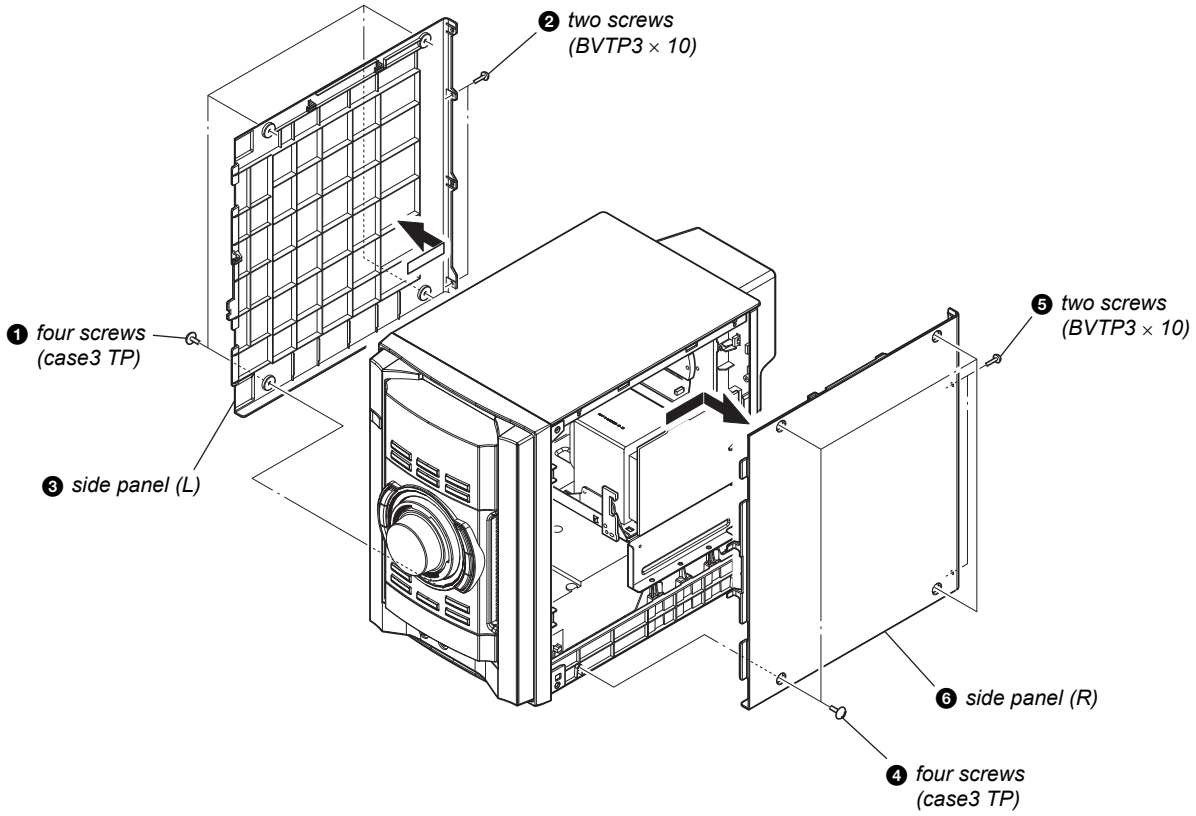
• This set can be disassembled in the order shown below.

3-1. DISASSEMBLY FLOW

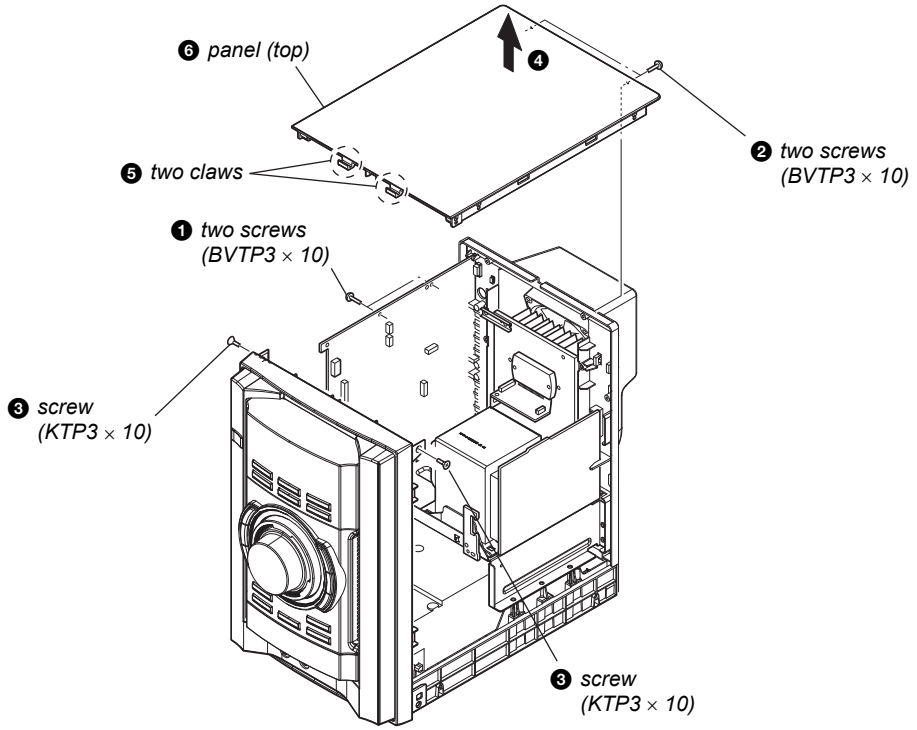

SET
3-2. SIDE PANEL (L)/(R) (Page 11)
3-3. PANEL (TOP) (Page 11)
3-5. FRONT PANEL BLOCK (EC78P: UK) (Page 12)
3-4. MAIN BOARD (Page 12)
3-6. FRONT PANEL BLOCK (EC68P/EC78P: US, Canadian) (Page 13)
3-7. BACK PANEL BLOCK (Page 13)
3-8. 3 CD MECHANISM BLOCK (EC78P: UK) (Page 14)
3-10. 1 CD MECHANISM BLOCK (EC68P/EC78P: US, Canadian) (Page 15)
3-11. BASE UNIT (EC68P/EC78P: US, Canadian) (Page 15)
3-9. BASE UNIT (EC78P: UK) (Page 14)
3-13. BELT (EC78P: UK) (Page 16)
3-12. BELT (EC68P/EC78P: US, Canadian) (Page 16)
3-14. OP BASE ASSY (KSM-213D) (Page 17)
3-14. OP BASE ASSY (KSM-213D) (Page 17)
(EC78P: UK)
(EC68P/EC78P: US, Canadian)

Note: Follow the disassembly procedure in the numerical order given.

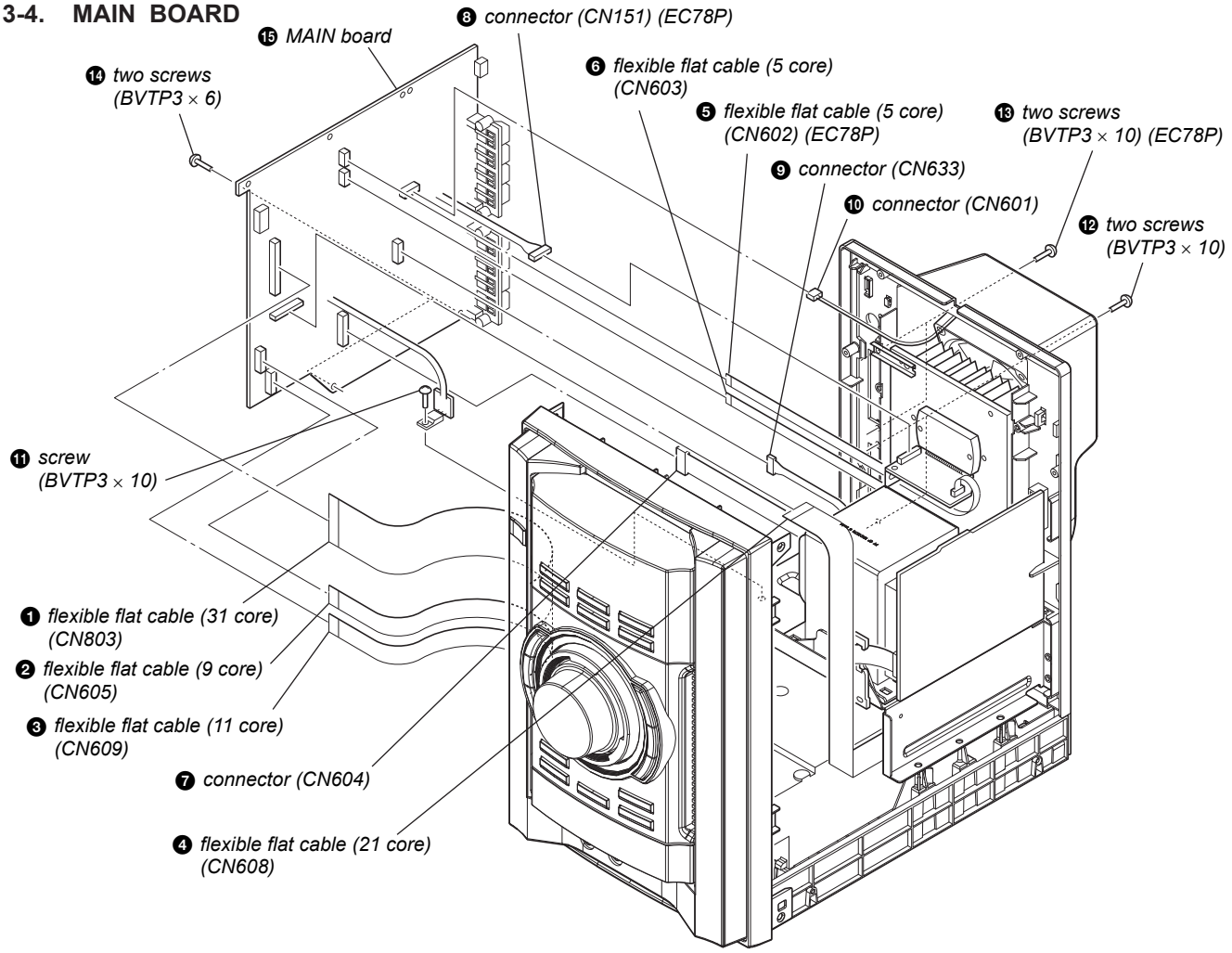
3-2. SIDE PANEL (L)/(R)



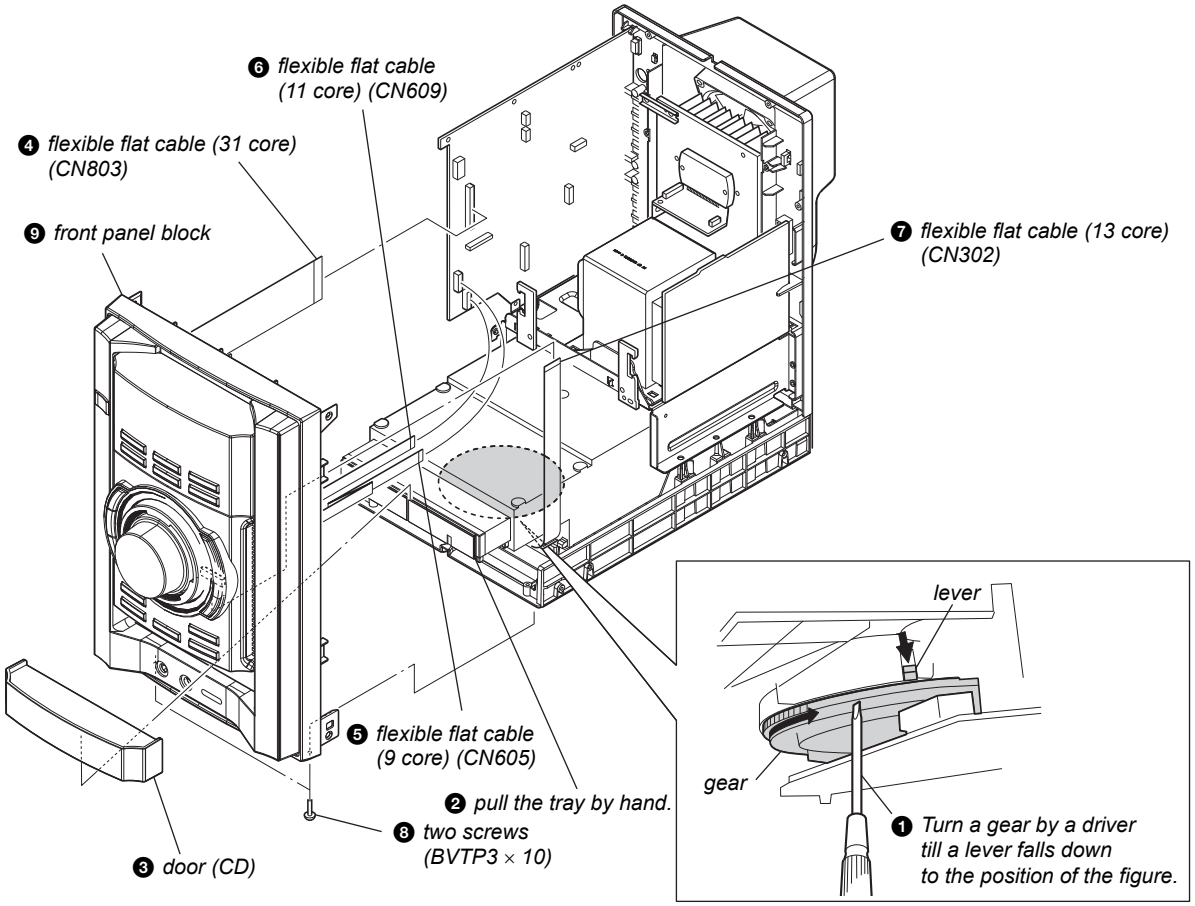
3-3. PANEL (TOP)



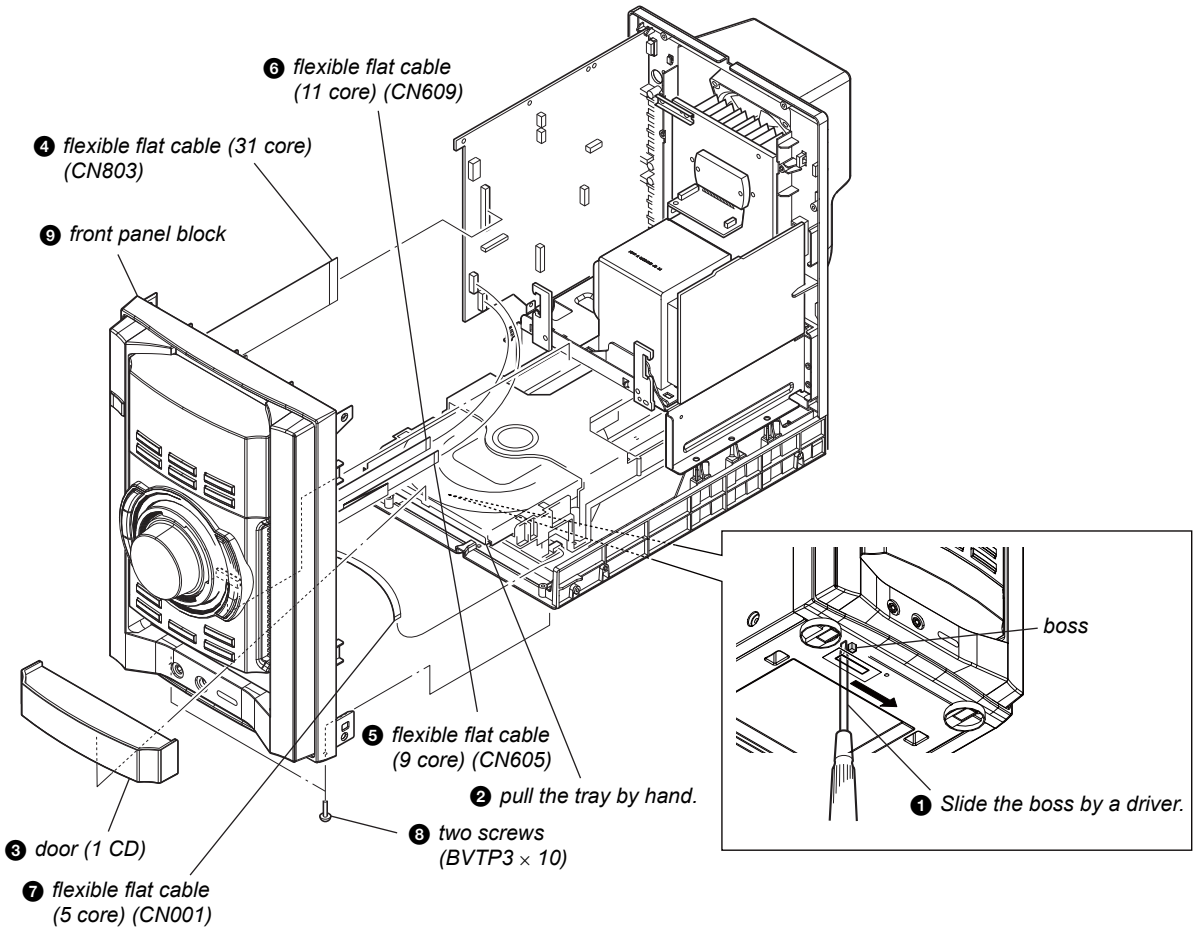
3-4. MAIN BOARD


⓯ MAIN board
⓮ two screws (BVTP3 × 6)
❽ connector (CN151) (EC78P)
❻ flexible flat cable (5 core) (CN603)
❺ flexible flat cable (5 core) (CN602) (EC78P)
⓭ two screws (BVTP3 × 10) (EC78P)
❾ connector (CN633)
❿ connector (CN601)
⓬ two screws (BVTP3 × 10)
⓫ screw (BVTP3 × 10)
❶ flexible flat cable (31 core) (CN803)
❷ flexible flat cable (9 core) (CN605)
❸ flexible flat cable (11 core) (CN609)
❼ connector (CN604)
❹ flexible flat cable (21 core) (CN608)

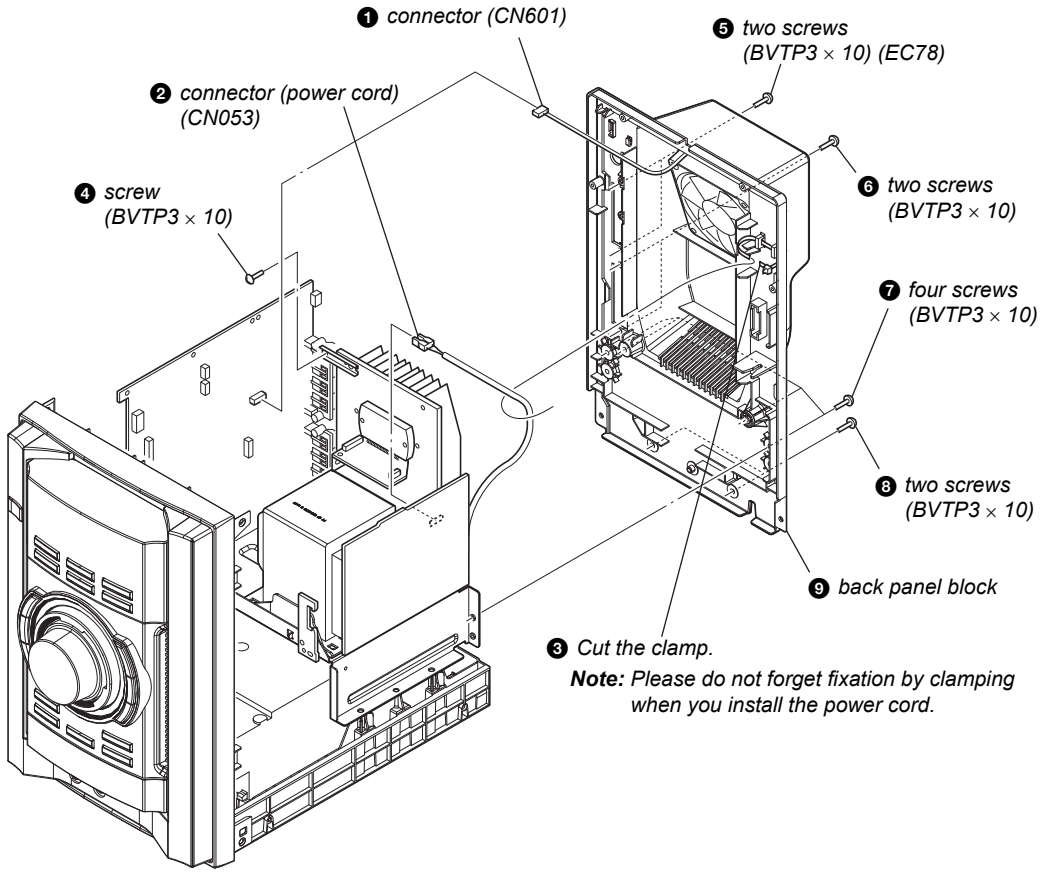
3-5. FRONT PANEL BLOCK (EC78P: UK)


❻ flexible flat cable (11 core) (CN609)
❹ flexible flat cable (31 core) (CN803)
❾ front panel block
❼ flexible flat cable (13 core) (CN302)
❺ flexible flat cable (9 core) (CN605)
❷ pull the tray by hand.
❽ two screws (BVTP3 × 10)
❸ door (CD)
lever
gear
❶ Turn a gear by a driver till a lever falls down to the position of the figure.

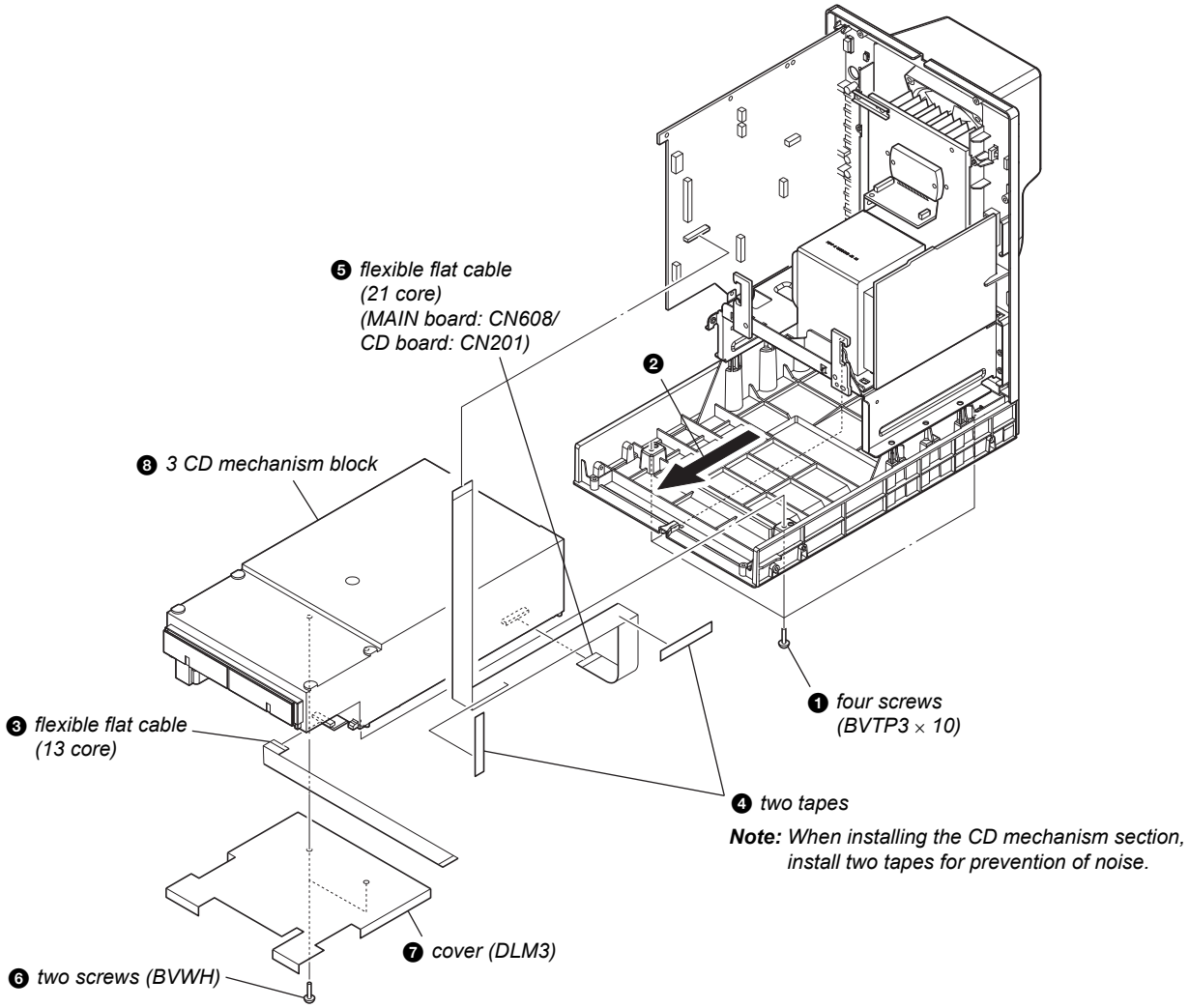
3-6. FRONT PANEL BLOCK (EC68P/EC78P: US, Canadian)


❻ flexible flat cable (11 core) (CN609)
❹ flexible flat cable (31 core) (CN803)
❾ front panel block
❺ flexible flat cable (9 core) (CN605)
❷ pull the tray by hand.
❸ door (1 CD)
❽ two screws (BVTP3 × 10)
❼ flexible flat cable (5 core) (CN001)
boss
❶ Slide the boss by a driver.

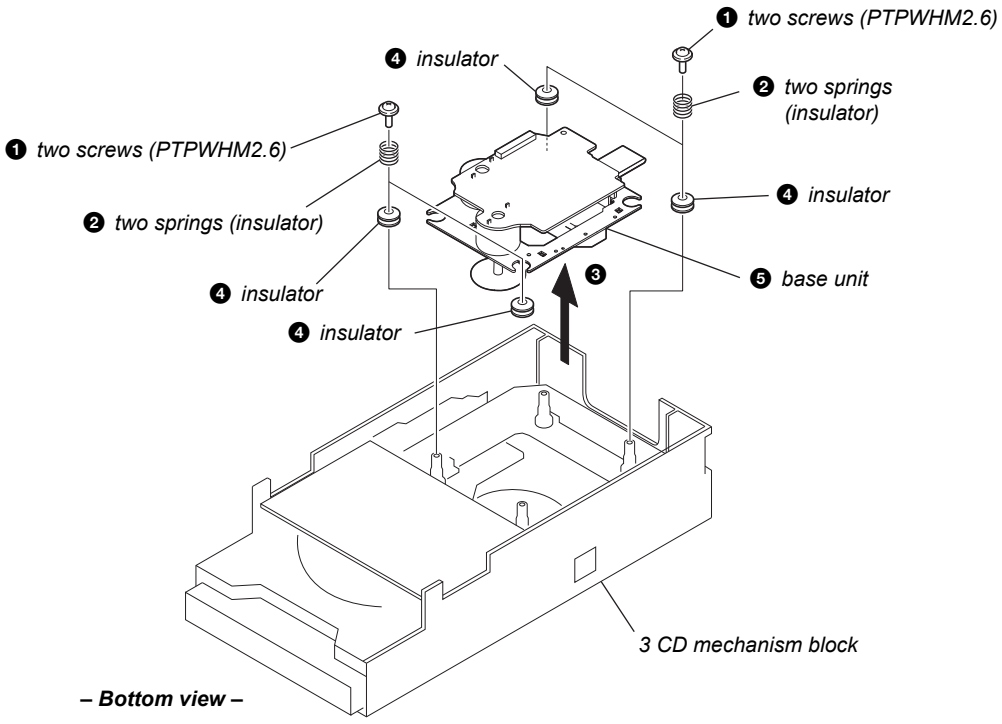
3-7. BACK PANEL BLOCK


❶ connector (CN601)
❺ two screws (BVTP3 × 10) (EC78)
❷ connector (power cord) (CN053)
❹ screw (BVTP3 × 10)
❻ two screws (BVTP3 × 10)
❼ four screws (BVTP3 × 10)
❽ two screws (BVTP3 × 10)
❾ back panel block
❸ Cut the clamp.
Note: Please do not forget fixation by clamping when you install the power cord.

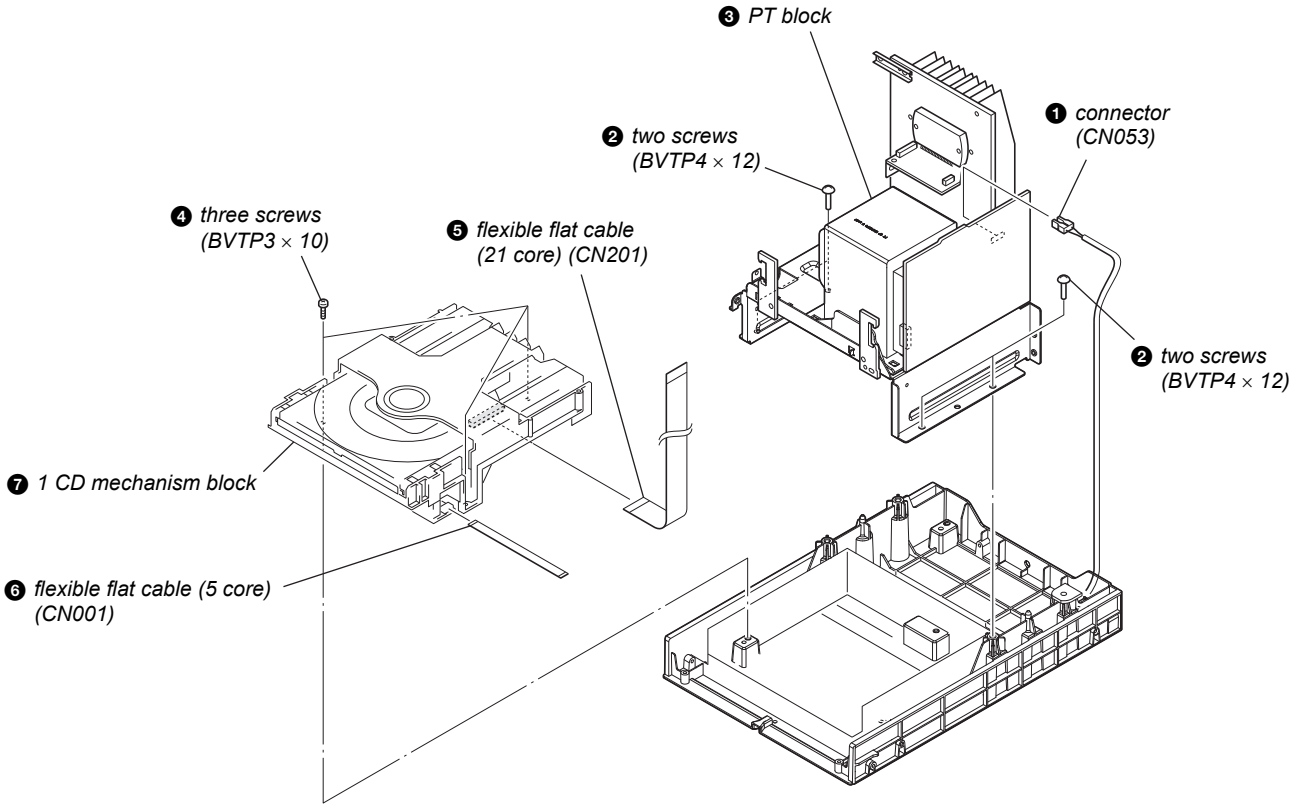
3-8. 3 CD MECHANISM BLOCK (EC78P: UK)



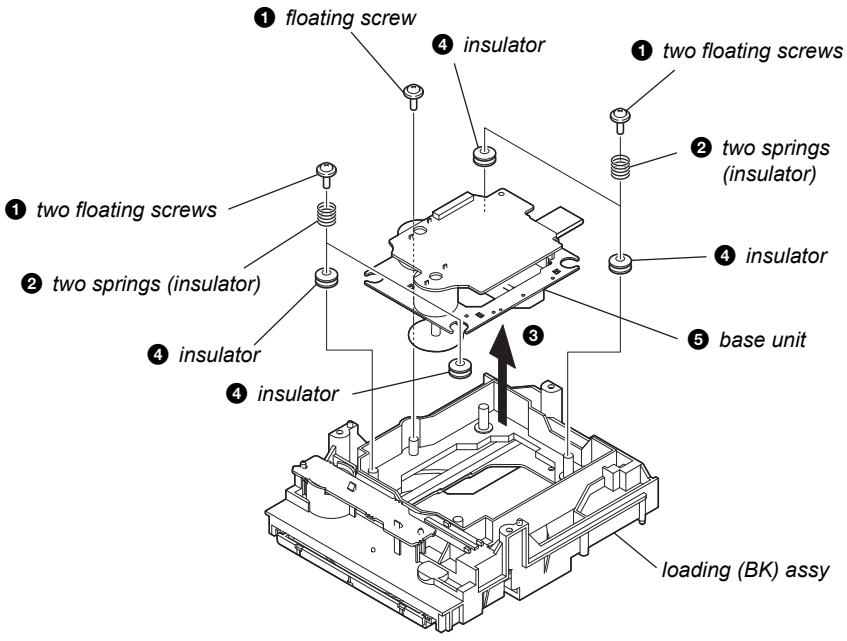
3-9. BASE UNIT (EC78P: UK)



3-10. 1 CD MECHANISM BLOCK (EC68P/EC78P: US, Canadian)

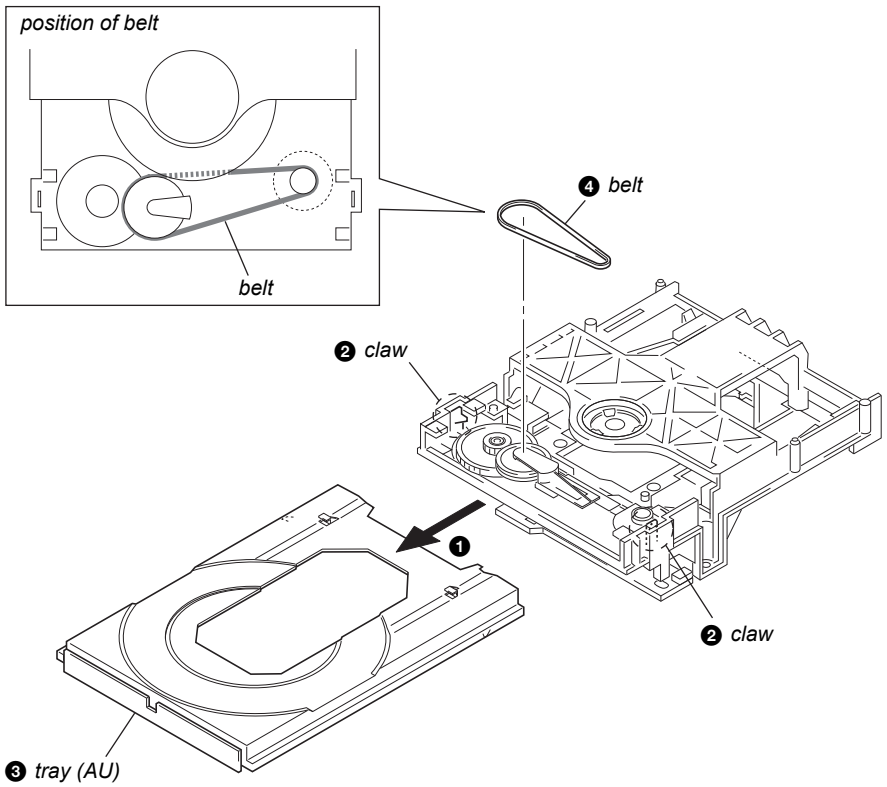

❸ PT block
❶ connector (CN053)
❷ two screws (BVTP4 × 12)
❹ three screws (BVTP3 × 10)
❺ flexible flat cable (21 core) (CN201)
❷ two screws (BVTP4 × 12)
❼ 1 CD mechanism block
❻ flexible flat cable (5 core) (CN001)

3-11. BASE UNIT (EC68P/EC78P: US, Canadian)

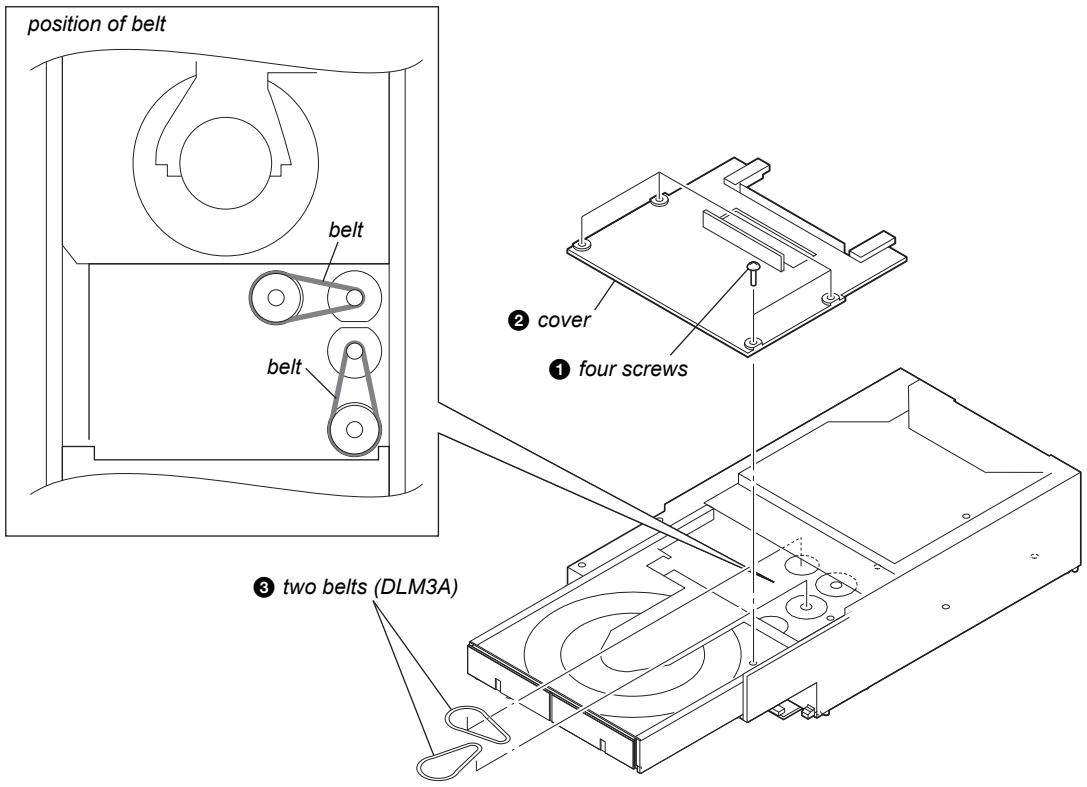


– Bottom view –

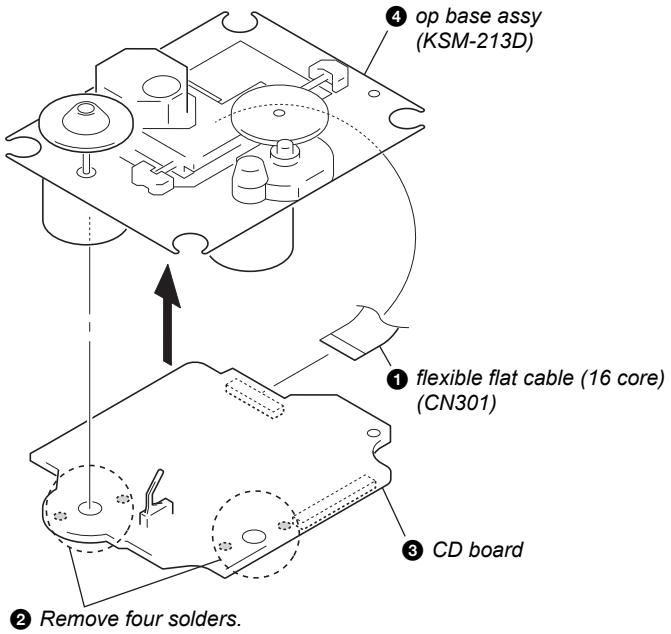
3-12. BELT (EC68P/EC78P: US, Canadian)



3-13. BELT (EC78P: UK)



3-14. OP BASE ASSY (KSM-213D)



SECTION 4
TEST MODE

COLD RESET

The cold reset clears all data including preset data stored in the memory to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. In the standby status, press the [I/⏻] button to turn the power on.
2. Press three buttons of [■], [FUNCTION] and at last [I/⏻] simultaneously.
3. When "RESET" appears, the set enters standby status.

PANEL TEST MODE

Enter The Panel Test Mode

Procedure:

1. In the standby status, press the [I/⏻] button to turn the power on.
2. Press three buttons of [DISPLAY], [■], and [FUNCTION] simultaneously.
3. When the panel test mode is activated, LEDs and segments of the liquid crystal display are all turned on.

Version Check

Procedure:

1. In the panel test mode (all LEDs and segments of the liquid crystal display are turned on), press the [FUNCTION] button.
2. On the liquid crystal display, date and version are displayed "xxxxxxxx". For example, "1114V102".
3. From this status, press the [▮▮] button, and the destination and model name are displayed. For example, "CE2" and "ESLO–".
4. To release from this mode, press three buttons of [DISPLAY], [■], and [FUNCTION] simultaneously.

Key Test Mode

Procedure:

1. In the panel test mode (all LEDs and segments of the liquid crystal display are turned on), press the [DISPLAY] button.
2. The message "KEY0 0 0"displayed. Whenever any buttons are pressed and the [VOLUME] dial is turned, the value is changed.
3. To release from this mode, press three buttons of [DISPLAY], [■], and [FUNCTION] simultaneously.

CD REPEAT 5 LIMIT CANCEL MODE

Number of repeats for CD playback is 5 times when the repeat mode is "REPEAT". This mode enables CD to repeat playback for limitless times.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. Press three buttons of [DISPLAY], [■], and [⏮ ◀◀ – TUNING] simultaneously.
4. It enters the CD repeat 5 limit cancel mode and displays "NO LIMIT"
5. To release this mode, press the [I/⏻] button to turn the power off.

CD SHIP MODE

This mode can run the CD sled motor optionally. Use this mode, for instance, when cleaning the optical pick-up.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Confirm there is no disc in all trays.
3. Press the [FUNCTION] button to select CD function.
4. Press two buttons of [CD ►] and [I/⏻] simultaneously.
5. Set to the CD ship mode. (chucking on)
6. After blink "STANDBY", "LOCK" is displayed, disconnect the AC plug.

CD TRAY LOCK

This mode is for the antitheft of CD disc in shop. (not for transport)

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. Insert a disc.
4. While pressing the [■] button, press the [⏏] button for more 5 seconds.
5. The message "LOCKED" is displayed and the disc tray is locked. (Even if exiting from this mode, the disc tray is still locked)
6. If press the [⏏] button to eject the disc, the message "LOCKED" is displayed and can not eject the disc.
7. To release this lock, while pressing the [■] button, press the [⏏] button for 5 seconds again.
8. The message "UNLOCKED" is displayed and the disc tray is unlocked.

CD POWER MANAGE

This mode is for switch the CD power supply on/off. Even if this state pulls out AC plug, it is held.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. Press the [I/⏻] button again to turn the power off (standby).
4. After pressing the [DISPLAY] button, while pressing the [■] button, press the [I/⏻] button.
5. It turns power on and display "CD POWER", then display "ON" or "OFF".

CHANGE-OVER THE AM TUNING INTERVAL

(Except EC78P: UK model)

The AM tuning interval can be changed over 9 kHz or 10 kHz.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [TUNER/BAND] button to select TUNER (AM) function.
3. Press the [I/⏻] button again to turn the power off (standby).
4. After pressing the [DISPLAY] button, while pressing the [TUNING + ▶▶ ▷▷⏭] button, press the [I/⏻] button.
5. It turns power on and display "9k STEP" or "10k STEP", and thus the tuning interval is changed over.

CD SHIP AND COLD RESET

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Confirm there is no disc in all trays.
3. Press the [FUNCTION] button to select CD function.
4. Press three buttons of [PLAY MODE/TUNING MODE], [⏮ ◀◀ – TUNING] and [I/⏻] simultaneously.
5. After blink "STANDBY", "RESET" is displayed, disconnect the AC plug.

COMMON TEST MODE

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press three buttons of [PLAY MODE/TUNING MODE], [TUNING + ▶▶ ▷▷⏭], and [DISPLAY] simultaneously.
3. It enters the common test mode and displays "COMMON".
4. Each time the [VOLUME] dial is turned, "VOL MIN", "VOL 16", and "VOL MAX" are displayed.
5. To release from this mode, press three buttons of [PLAY MODE/TUNING MODE], [TUNING + ▶▶ ▷▷⏭], and [DISPLAY] simultaneously.

[CD SERVO TEST MODE]

This mode can check the servo system operations of the optical pick-up system (= optical unit + CD board).

Note1: Do not enter the [CD SERVO TEST MODE] while any other test mode is in progress.

Note2: Do not enter any other test mode while the [CD SERVO TEST MODE] is in progress.

How to Enter the CD Servo Test Mode

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. Press three buttons of [CD ►], [⏮ ◄◄ – TUNING] and [DISPLAY] simultaneously.
4. It enters the CD servo test mode and displays “BDT S CU”.

How to Exit from the CD Servo Test Mode

Procedure:

1. Press three buttons of [CD ►], [⏮ ◄◄ – TUNING] and [DISPLAY] simultaneously.
2. It releases from the CD Servo Test Mode and returns to the ordinary CD function.

Key Operation:

[🗀 +], [🗀 –]:

Use these keys to move between the five modes contained in the CD Servo Test Mode, that are the S-Curve Mode, the RAM Read Mode, the RAM Write Mode, the Command Out Mode and the Error Rate Mode as described below. Also, use these keys to move between the menus within the respective five modes. When [🗀 +] is pressed, the screen advances to the next menu or to the next mode. When [🗀 –] is pressed, the screen returns back to the previous menu or to the previous mode. Use these keys also to increase or decrease the numeric value when changing the numeric value. Pressing [🗀 +] increases the value and pressing [🗀 –] decreases the value.

[DSGX] , [EQ]:

Use these keys to move between the different layers of the hierarchy of the CD Servo Test Mode shown below. Press [DSGX] to move down to the lower layer, and press [EQ] to move up to the higher layer.

[TUNING + ►► ⏭], [⏮ ◄◄ – TUNING]:

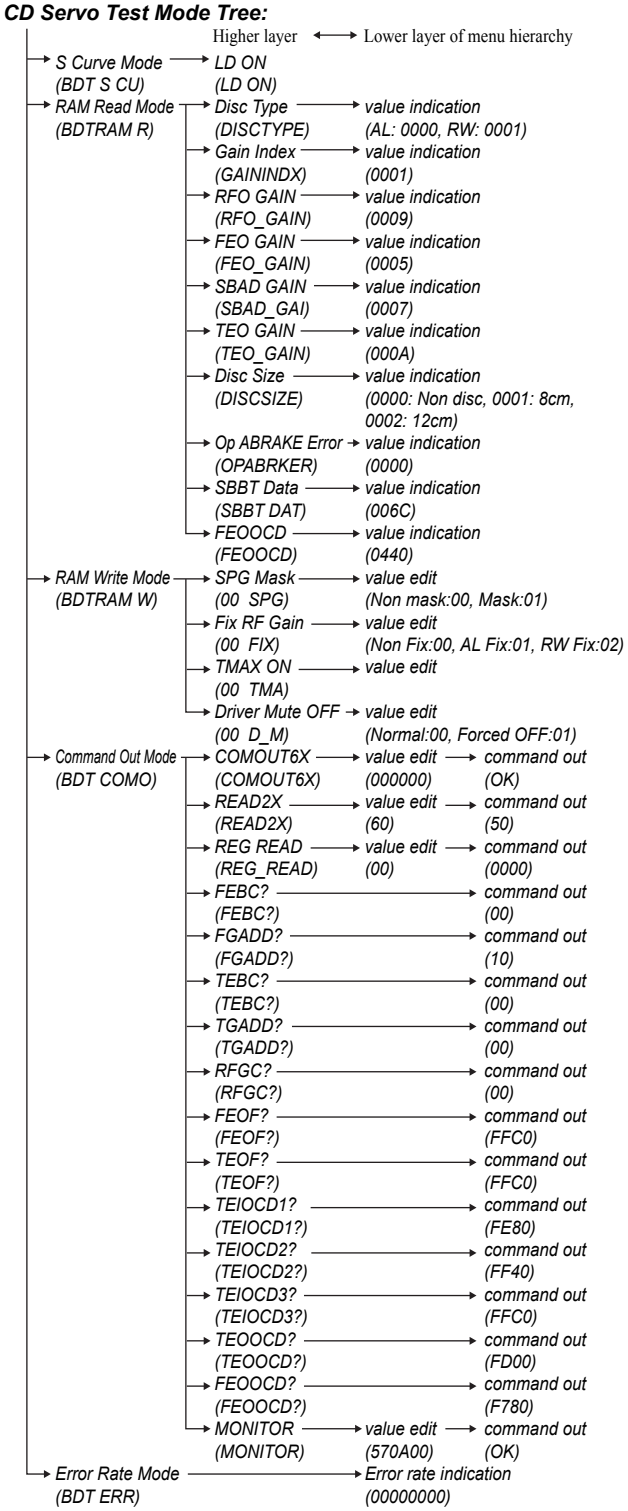
Use these keys to move the cursor to the right digit or to the left digit in the six-digit number, when changing the numeric value.

Press [TUNING + ►► ⏭] to move the cursor to the right, and press [⏮ ◄◄ – TUNING] to return the cursor to the left.

[FUNCTION]:

Use this key to execute Command Out in the Command Out Mode.

CD Servo Test Mode Tree:


Higher layer ⟷ Lower layer of menu hierarchy
S Curve Mode (BDT S CU) → LD ON (LD ON)
RAM Read Mode (BDTRAM R) → Disc Type (DISCTYPE) → value indication (AL: 0000, RW: 0001)
Gain Index (GAININDX) → value indication (0001)
RFO GAIN (RFO_GAIN) → value indication (0009)
FEO GAIN (FEO_GAIN) → value indication (0005)
SBAD GAIN (SBAD_GAI) → value indication (0007)
TEO GAIN (TEO_GAIN) → value indication (000A)
Disc Size (DISCSIZE) → value indication (0000: Non disc, 0001: 8cm, 0002: 12cm)
Op ABRAKE Error (OPABRKER) → value indication (0000)
SBBT Data (SBBT DAT) → value indication (006C)
FEOOCD (FEOOCD) → value indication (0440)
RAM Write Mode (BDTRAM W) → SPG Mask (00 SPG) → value edit (Non mask:00, Mask:01)
Fix RF Gain (00 FIX) → value edit (Non Fix:00, AL Fix:01, RW Fix:02)
TMAX ON (00 TMA) → value edit
Driver Mute OFF (00 D_M) → value edit (Normal:00, Forced OFF:01)
Command Out Mode (BDT COMO) → COMOUT6X (COMOUT6X) → value edit (000000) → command out (OK)
READ2X (READ2X) → value edit (60) → command out (50)
REG READ (REG_READ) → value edit (00) → command out (0000)
FEBC? (FEBC?) → command out (00)
FGADD? (FGADD?) → command out (10)
TEBC? (TEBC?) → command out (00)
TGADD? (TGADD?) → command out (00)
RFGC? (RFGC?) → command out (00)
FEOF? (FEOF?) → command out (FFC0)
TEOF? (TEOF?) → command out (FFC0)
TEIOCD1? (TEIOCD1?) → command out (FE80)
TEIOCD2? (TEIOCD2?) → command out (FF40)
TEIOCD3? (TEIOCD3?) → command out (FFC0)
TEOOCD? (TEOOCD?) → command out (FD00)
FEOOCD? (FEOOCD?) → command out (F780)
MONITOR (MONITOR) → value edit (570A00) → command out (OK)
Error Rate Mode (BDT ERR) → Error rate indication (00000000)

CD SERVICE MODE

This mode can move the SLED of the optical pick-up, and also can turn the optical pick-up laser power on and off.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press three buttons of [CD ►], [TUNING + ►► ▷▷Ⅱ], and DISPLAY simultaneously.
3. Press the [FUNCTION] button to select CD function.
4. It enters the CD service mode and displays "SERVICE".
5. To exit from this mode, press three buttons of [CD ►], [TUNING + ►► ▷▷Ⅱ] and DISPLAY simultaneously.

Key Operation:

[TUNING + ►► ▷▷Ⅱ], [Ⅱ◁◁ ◄◄ – TUNING]:

Use these keys to move the SLED. When [TUNING + ►► ▷▷Ⅱ] is pressed in this mode, the SLED moves to outer circumference and the message "SLED OUT" is displayed.

When [Ⅱ◁◁ ◄◄ – TUNING] is pressed in this mode, the SLED moves to inner circumference and the message "SLED IN" is displayed.

[DISPLAY]:

Use this key to turn the optical pick-up laser power on and off. When the laser power is turned on, the message "LD ON" is displayed. When the laser power is turned off, the message "LD OFF" is displayed.

CD ERROR CODE

The past errors of the CD mechanism (CDM) are displayed as the CDM Errors, and those of the optical pick-up system (= optical unit + CD board) are displayed as the BD Errors as shown below.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function.
3. Press three buttons of [TUNING + ►► ▷▷Ⅱ], [■] and [DISPLAY] simultaneously.
4. Then, the CDM error code is displayed as "M0xxxxxx" (x means hexadecimal number) on the liquid crystal display as shown below.
5. Every pressing of the [TUNING + ►► ▷▷Ⅱ] button in this mode increments the number after "M" starting from "M0" up to "M9", and then returns to "M0". Every pressing of the [Ⅱ◁◁ ◄◄ – TUNING] button in this mode decrements the number after "M". The smaller the error code number is, the newer the error content is.
6. When the [PLAY MODE/TUNING MODE] button is pressed then, the BD error code is displayed as "D0xxxxxx" (x means hexadecimal number) on the liquid crystal display as shown below. In the same way as the CDM error code, use of the [TUNING + ►► ▷▷Ⅱ] and the [Ⅱ◁◁ ◄◄ – TUNING] buttons in this mode enables tracing of the error history.
7. To release from this mode, press the [I/⏻] button to turn the power off.

Contents of "CDM Errors"

Error display example

M 0 FF 11 42
① ② ③ ④

① It indicates the error history number
0 to 9: The error code number 0 indicates the newest error.

② It indicates whether the CDM error occurs in the normal operations or during the initialization operation.
FF : The error has occurred in the normal operations.
Other than FF : The error has occurred during the initialization operation.

③ It indicates the processing during which the trouble has occurred.
01: The disc EJECT processing is in progress.
02: The disc INSERTION-WAITING processing is in progress.
03: Processing of the disc INSERTION-REQUEST for the upper CD tray is in progress.
04: Processing of the disc EJECTION-REQUEST for the upper CD tray is in progress.
05: The disc pulling-in operation is in progress.
06: The disc chucking processing is in progress.
07: The disc re-chucking processing is in progress.
08: The disc chucking-release completion operation is in progress.

④ It indicates the operation during which the trouble has occurred.
00 : Waiting for the operation.
10 to 13 : The disc EJECT operation is in progress.
20 : The disc pulling-in operation is in progress.
30 : The disc chucking-release operation is in progress.
40 to 43 : The disc EJECT operation due to error is in progress.

Contents of "BD Errors"

Error display example

D 0 02 09 01
① ② ③ ④

① It indicates the error history number
0 to 9: The error code number 0 indicates the newest error.

② It indicates the error content
01: The focus servo cannot lock-in.
02: GFS is no good (NG).
03: The startup time exceeds the specified period of time (time over)
04: The focus servo is unlocked continuously.
05: Q code cannot be obtained within the specified period of time.
06: The tracking servo cannot lock-in.
07: Blank disc

③ It indicates the on-going processing of optical pick-up system (= optical unit + BD board) when the trouble has occurred.
- 01: The CD SHIP mode processing is in progress.
- 02: The POWER OFF processing is in progress.
- 03: The INITIALIZE processing is in progress.
- 04: The optical pick-up system (= optical unit + BD board) is in the stop state.
- 05: The STOP operation is in progress.
- 06: The startup processing is in progress.
- 07: The TOC read-in processing is in progress.
- 08: The SEARCH operation is in progress.
- 09: The PLAY operation is in progress.
- 0A: The PAUSE operation is in progress.
- 0B: The PLAY – MANUAL SEARCH operation is in progress.
- 0C: The PAUSE – MANUAL SEARCH operation is in progress.

④ It indicates the operation that is being processed when the trouble has occurred.
It indicates the step number of each processing specified by ③. Because the numbers of steps are different in each processing, this number is different in each processing.

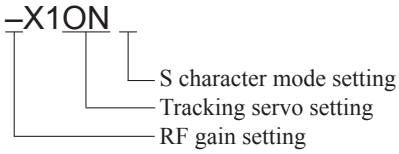
CD FACTORY MODE

Note1: Do not enter the [CD FACTORY MODE] while any other test-mode is in progress.

Note2: Do not enter any other test mode while the [CD FACTORY MODE] is in progress.

Procedure:

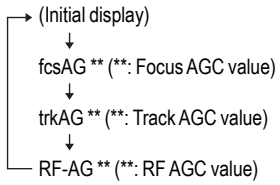
1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select CD function
3. Press three buttons of [CD ►], [FUNCTION], and [DISPLAY] simultaneously.
4. It enters the CD factory mode and displays the following message.



Key Operation:

[DISPLAY]:

The display changes in the following order whenever the button is pressed.



[DSGX]:

RF gain setting changes whenever the button is pressed.
"–": No gain fixation.
"AL": Fix to the gain for AL disc.
"RW": Fix to the gain for RW disc.

[EQ]:

Tracking servo setting changes whenever the button is pressed.
"ON": Tracking servo ON.
"OFF": Tracking servo OFF.

[FUNCTION]:

S character mode setting changes whenever the button is pressed.
" ": S character mode OFF.
"S": S character mode ON.

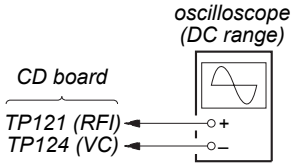
5. To release from this mode, press the [I/⏻] button to turn the power off.

SECTION 5
ELECTRICAL ADJUSTMENTS

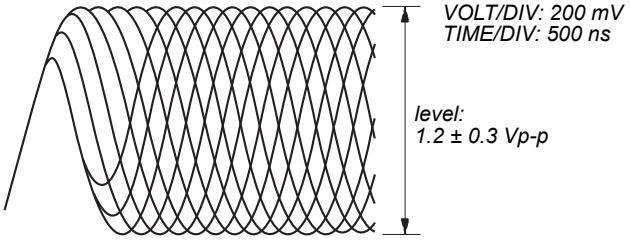
CD SECTION

Note:
1. CD Block is basically constructed to operate without adjustment.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10 MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.
5. Check the focus bias check when optical pick-up block is replaced.

FOCUS BIAS CHECK

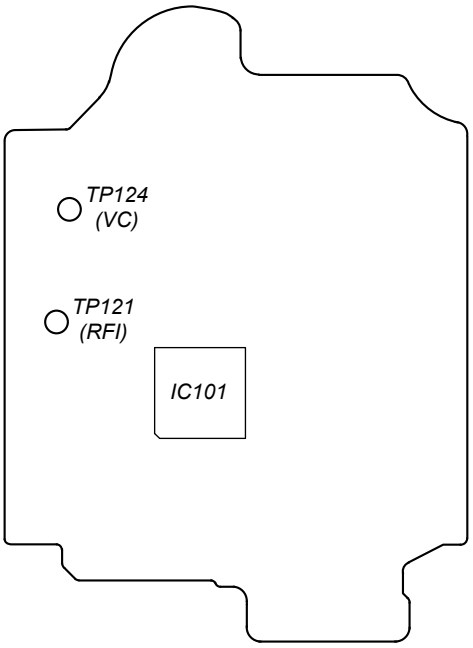


Procedure :
1. Connect the oscilloscope to TP121 (RFI) and TP124 (VC) on the CD board.
2. Press the [I/⏻] button to turn the power ON, and press the [⏏] button to open the CD disc tray.
3. Set disc (YEDS-18) on the trey and press the [CD ►] button to playback.
4. Confirm that oscilloscope waveform is as shown in the figure below. (eye pattern)
   A good eye pattern means that the diamond shape (◊) in the center of the waveform can be clearly distinguished.



Checking Location:

– CD Board (Conductor Side) –



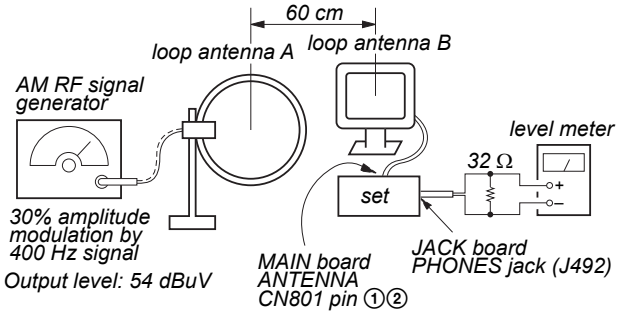
TUNER SECTION

0 dB = 1 μV

[AM]

Setting:

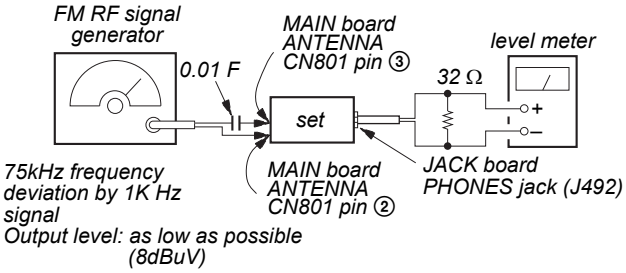
FUNCTION: AM

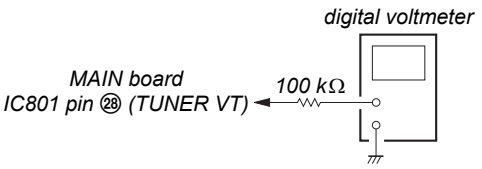


[FM]

Setting:

FUNCTION: FM





• Repeat the procedures in each adjustment several times.

AM FREQUENCY COVERAGE ADJUSTMENT (Except EC78P: UK model)		
Adjustment Part	Frequency Display	Reading on Digital Voltmeter
L801	530 kHz	1.5 ± 0.1 V
Confirmation	1,710 kHz	8 ± 0.5 V

AM FREQUENCY COVERAGE ADJUSTMENT (EC78P: UK model)		
Adjustment Part	Frequency Display	Reading on Digital Voltmeter
L801	531 kHz	1.5 ± 0.1 V
Confirmation	1,602 kHz	7.2 ± 0.5 V

AM TRACKING ADJUSTMENT (Except EC78P: UK model)	
Adjust for a maximum reading on level meter	
L805	530 kHz

AM TRACKING ADJUSTMENT (EC78P: UK model)	
Adjust for a maximum reading on level meter	
L805	531 kHz

FM FREQUENCY COVERAGE ADJUSTMENT		
Adjustment Part	Frequency Display	Reading on Digital Voltmeter
L803	87.5 kHz	1.75 ± 0.1 V
Confirmation	108 kHz	6.2 ± 0.5 V

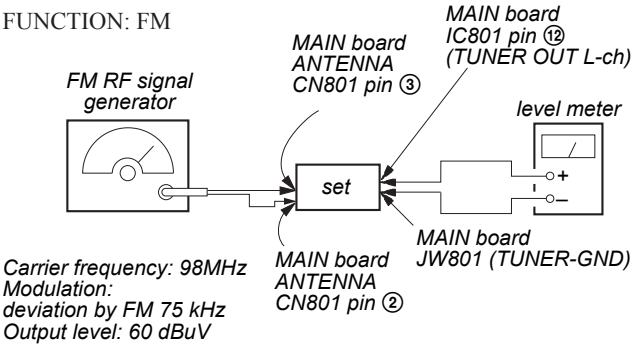
FM TRACKING ADJUSTMENT	
Adjust for a minimum reading on level meter	
L804	98 MHz

Adjustment Location: MAIN board (See page 24)

FM DETECTOR ADJUSTMENT

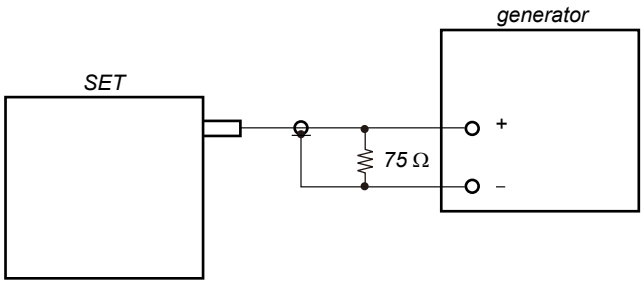
Setting:

FUNCTION: FM



1. Turn the set to 98 MHz.
2. Adjust L802 so that modulation distortion may become the best in the vicinity of the maximum value where the tuner out level becomes –15dBuV or more.

FM AUTO STOP CHECK



Procedure :

1. Turn the power on.
2. Input the following signal from Signal Generator to FM antenna input directly.

* Carrier Freq : A = 87.5 MHz, B = 98 MHz, C = 108 MHz
Deviation : 75 kHz
Modulation : 1 kHz
ANT input : 35 dBu (EMF)

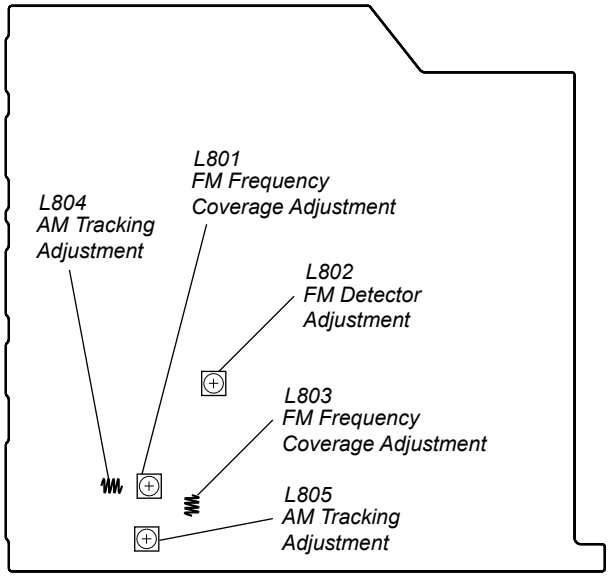
Note: Please use 75 ohm “coaxial cable” to connect SG and the set. You cannot use video cable for checking.
Please use SG whose output impedance is 75 ohm.

3. Set to FM tuner function and scan the input FM signal with automatic scanning.
4. Confirm that input Frequency of A, B and C detected and automatic scanning stops.

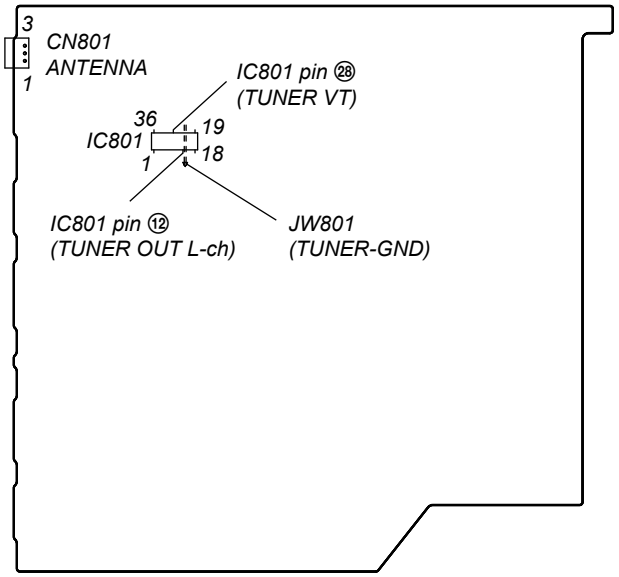
The stop of automatic scanning means “The station signal is received in good condition”.

Adjustment Location and Connecting Points:

– MAIN Board (Component Side) –

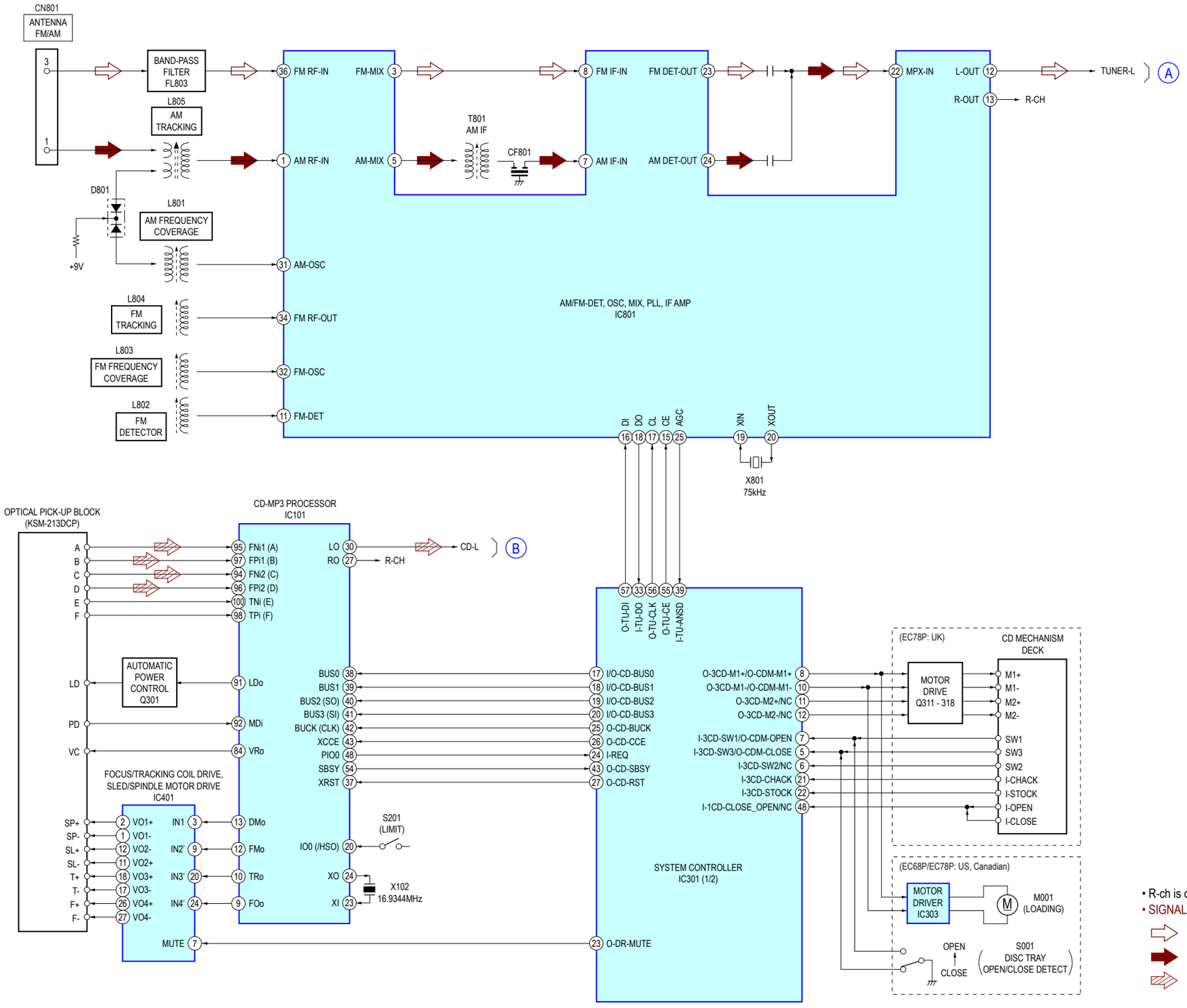


– MAIN Board (Conductor Side) –



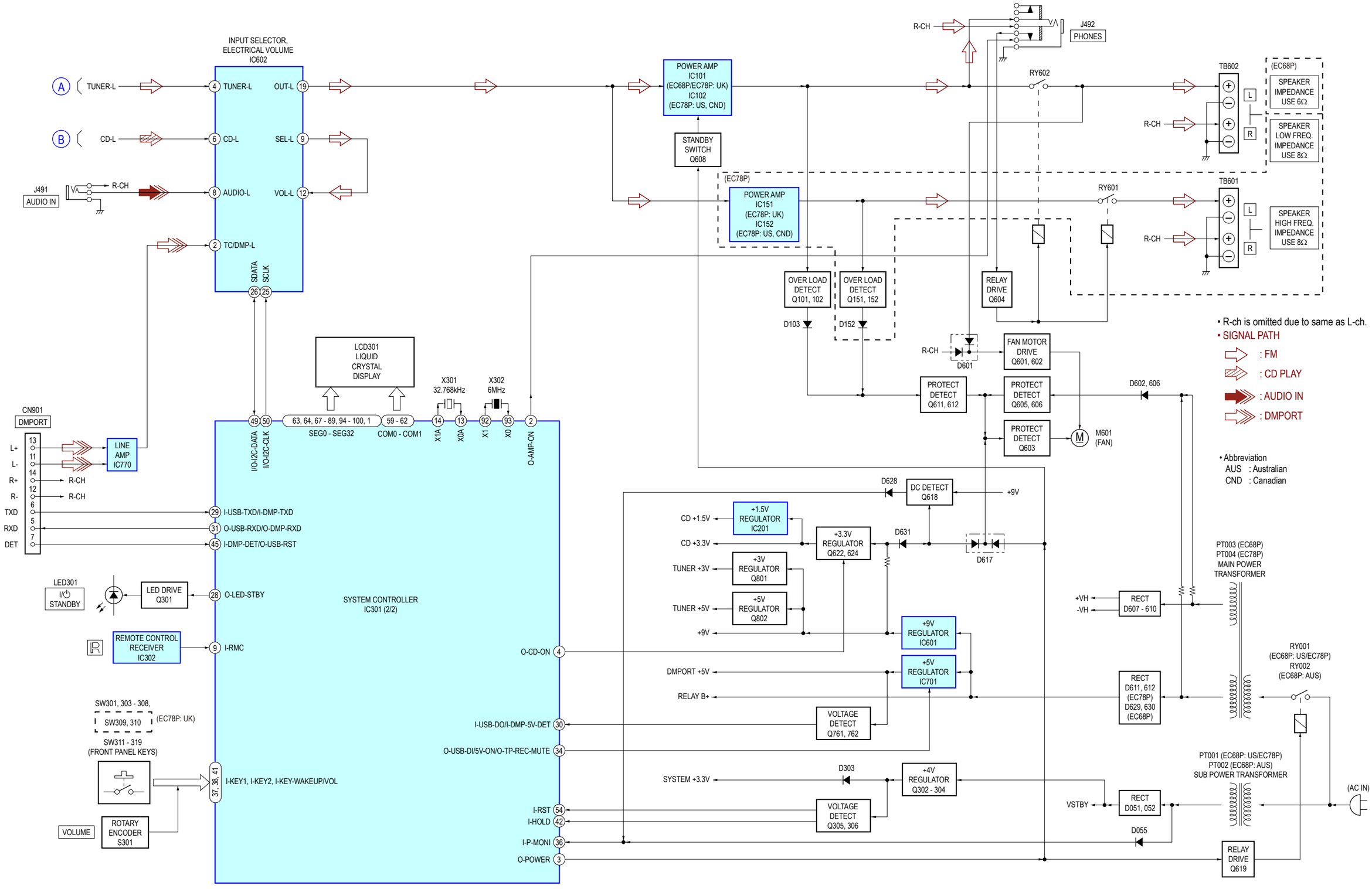
SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM - CD SERVO, TUNER Section -



• R-ch is omitted due to same as L-ch.
• SIGNAL PATH
: FM
: AM
: CD PLAY

6-2. BLOCK DIAGRAM - MAIN Section -



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For Printed Wiring Boards.

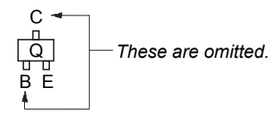
Note:

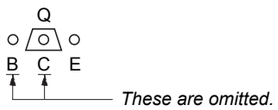
- ○——— : Parts extracted from the component side.
- ——— : Parts extracted from the conductor side.
- ⬚← : indicated side identified with part number.
- △ : Internal component.
- ▬ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)

Caution:

Parts face side: (Conductor Side)	Parts on the parts face side seen from the pattern face are indicated.
Pattern face side: (Component Side)	Parts on the pattern face side seen from the parts face are indicated.

- Indication of transistor.





For Schematic Diagrams.

Note:

- All capacitors are in µF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : panel designation.

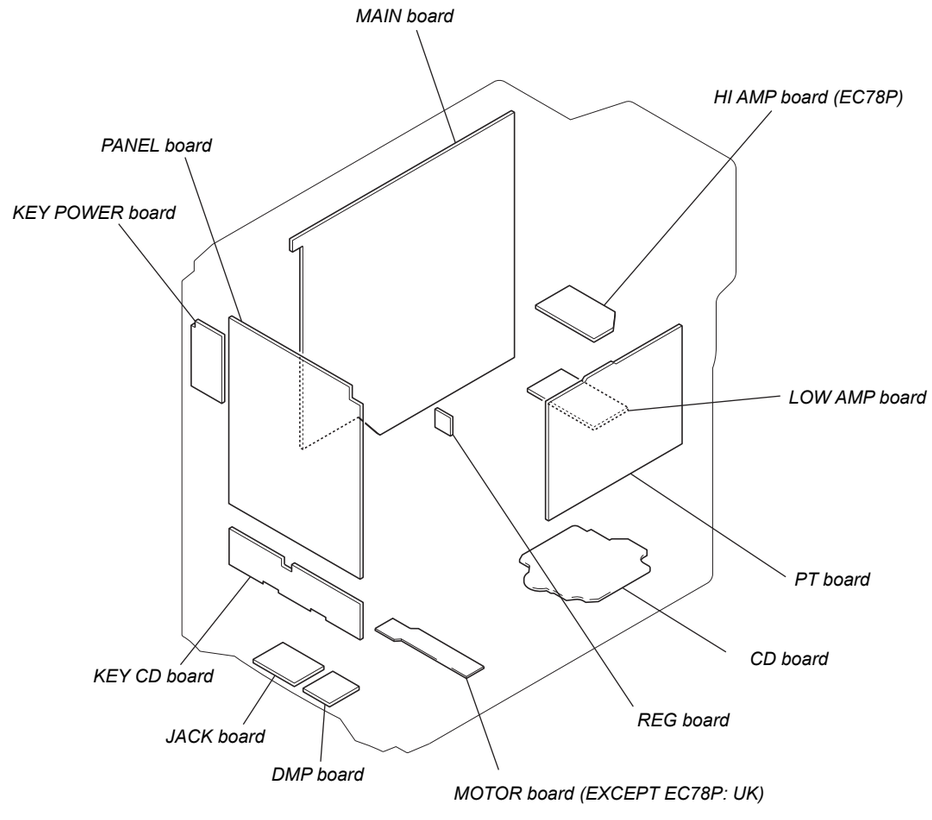
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬▬ : B+ Line.
- ▬ ▬ ▬ : B– Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.

– CD Board –
no mark : CD PLAY
– Other Boards –
no mark : TUNER (FM/AM)

- Voltages are taken with a VOM (Input impedance 10 MΩ).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨ : CD PLAY
  ➡ : AUDIO IN
  ⇨ : DMPORT
- Abbreviation
  AUS : Australian model
  CND : Canadian model

- **Circuit Boards Location**

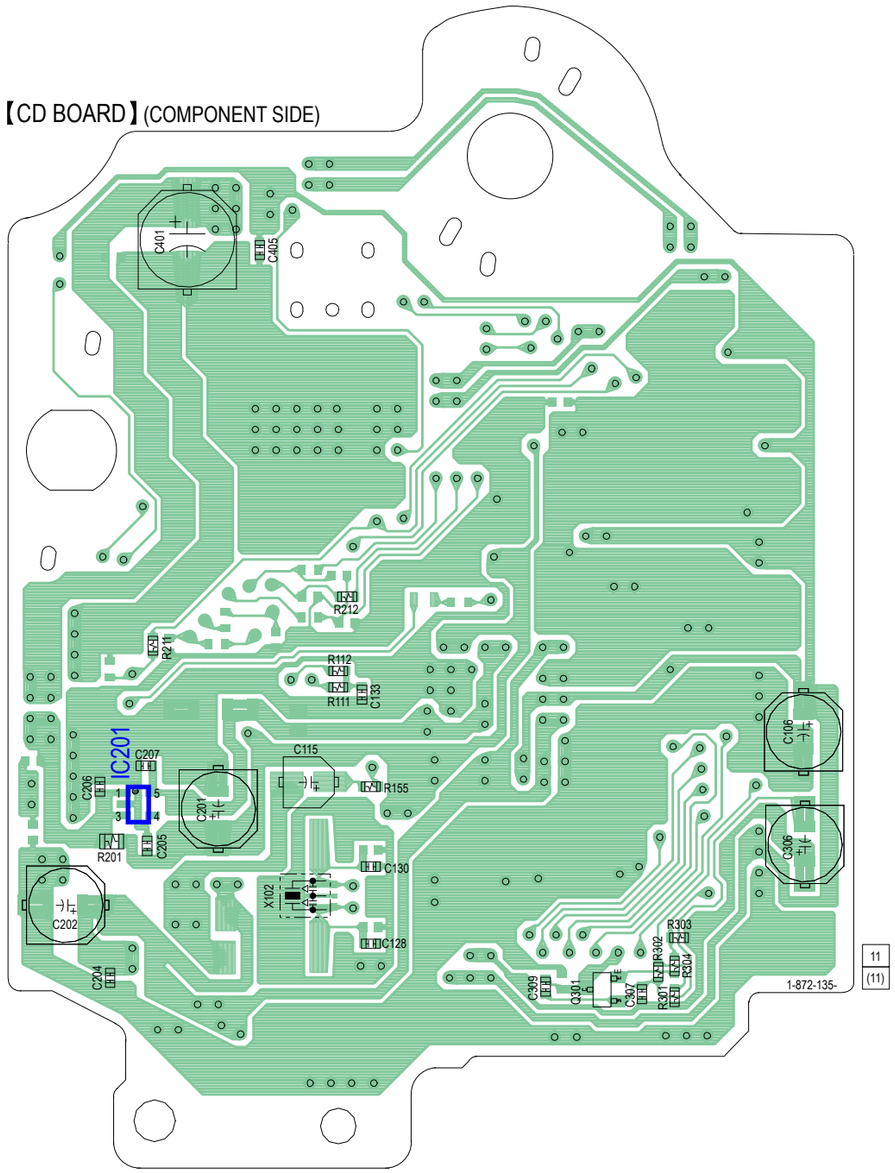


6-3. PRINTED WIRING BOARD - CD Board -

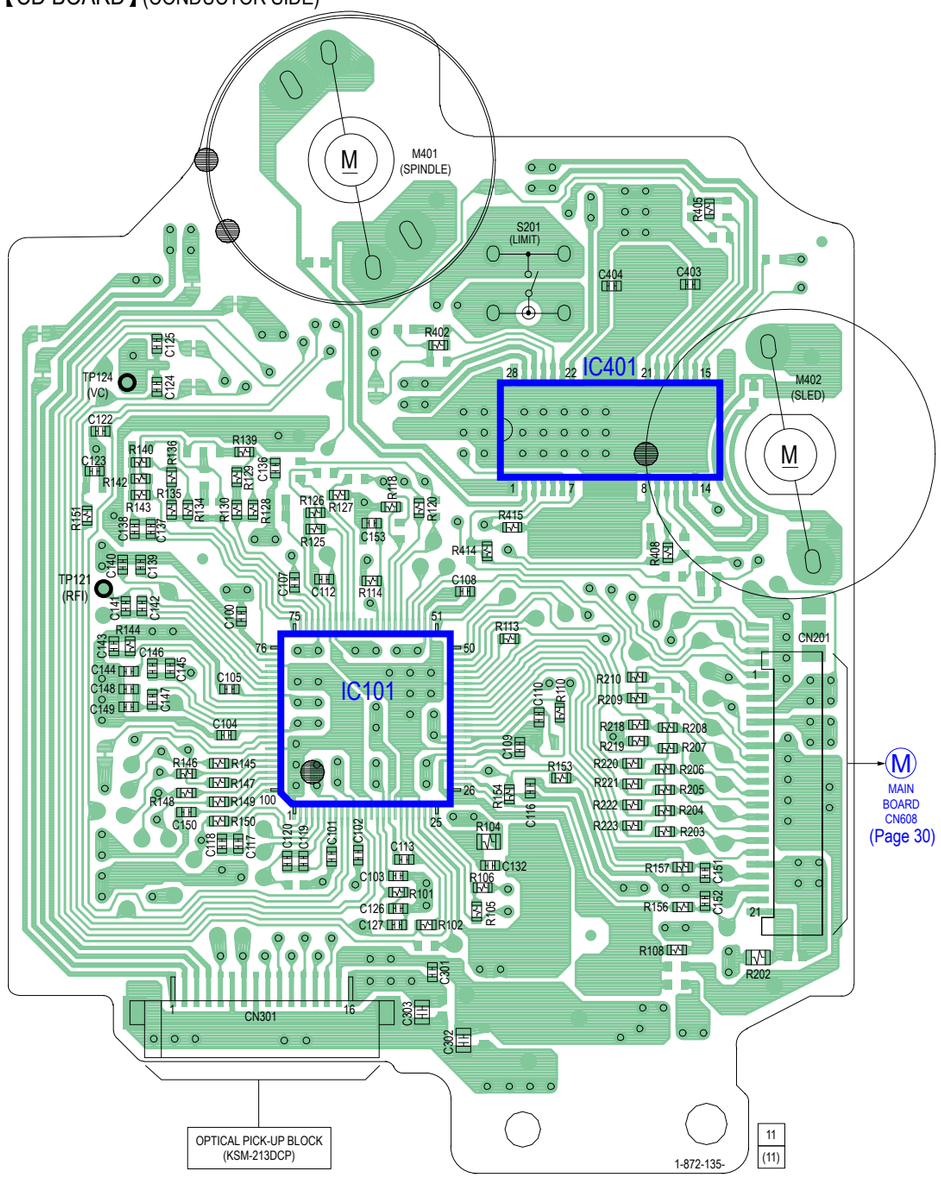
• See page 27 for Circuit Boards Location.

• : Uses unleaded solder.

【CD BOARD】(COMPONENT SIDE)



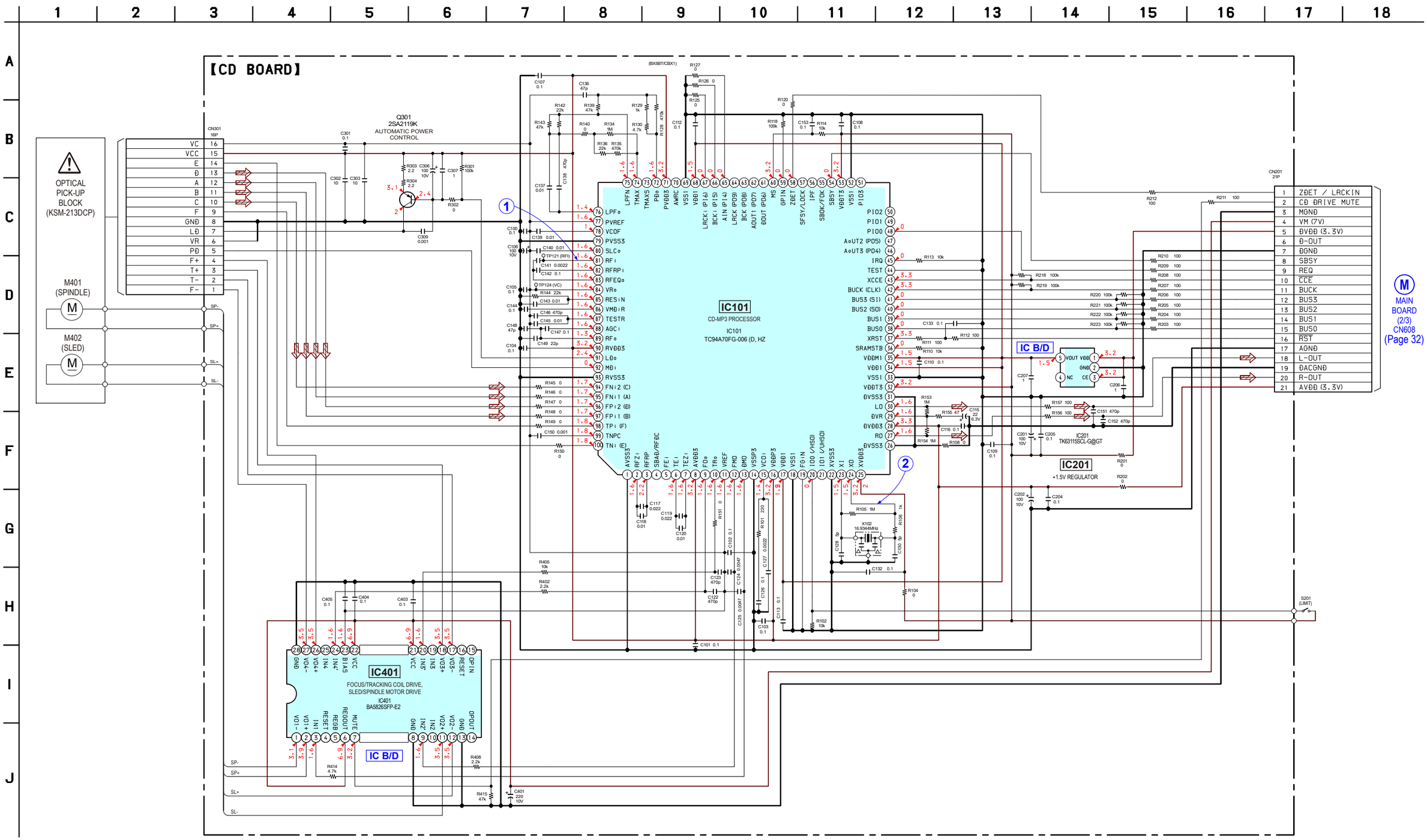
【CD BOARD】(CONDUCTOR SIDE)



Ⓜ MAIN BOARD CN608 (Page 30)

6-4. SCHEMATIC DIAGRAM - CD Board -

• See page 39 for waveforms. • See page 42 for IC Block Diagrams. • See page 43 for IC Pin Function Description.



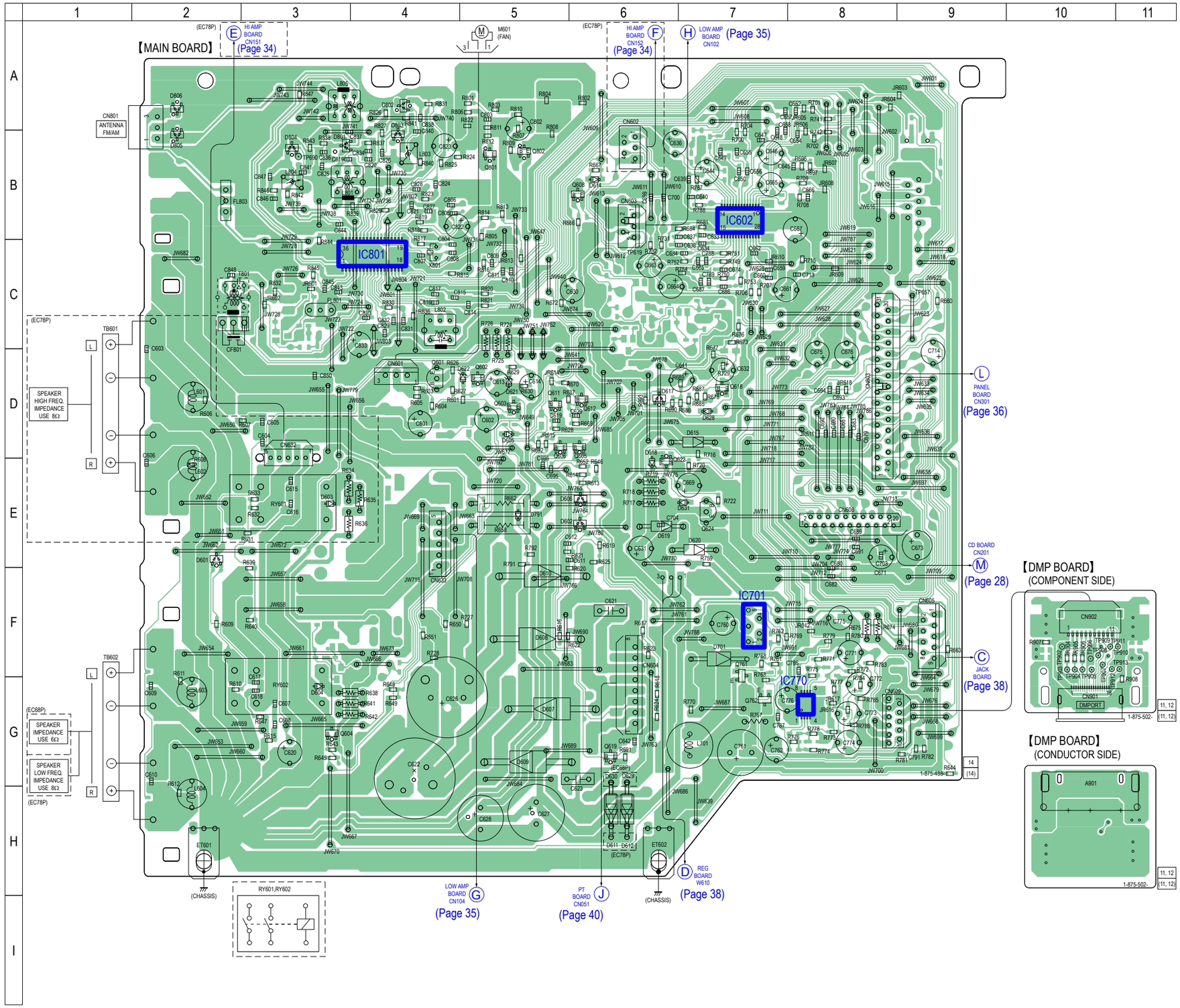
- **Semiconductor Location**

Ref. No.	Location
D601	E-2
D602	E-6
D603	E-3
D604	G-3
D605	D-5
D606	E-6
D607	G-5
D608	F-5
D609	G-5
D610	F-5
D611	H-6
D612	H-6
D614	B-6
D615	D-7
D617	D-6
D618	E-6
D619	E-6
D620	E-7
D621	D-5
D622	D-5
D628	D-7
D629	H-6
D630	H-6
D631	E-7
D701	F-7
D791	E-5
D801	B-3
D802	A-4
D803	B-4
D804	B-3
D805	B-2
D806	A-2
IC602	B-7
IC701	F-7
IC770	G-8
IC801	C-4
Q601	D-4
Q602	D-5
Q603	D-5
Q604	G-3
Q605	D-6
Q606	D-5
Q608	B-6
Q611	D-5
Q612	D-6
Q618	D-7
Q619	G-6
Q622	E-6
Q624	E-7
Q761	G-7
Q762	G-7
Q801	B-5
Q802	B-5

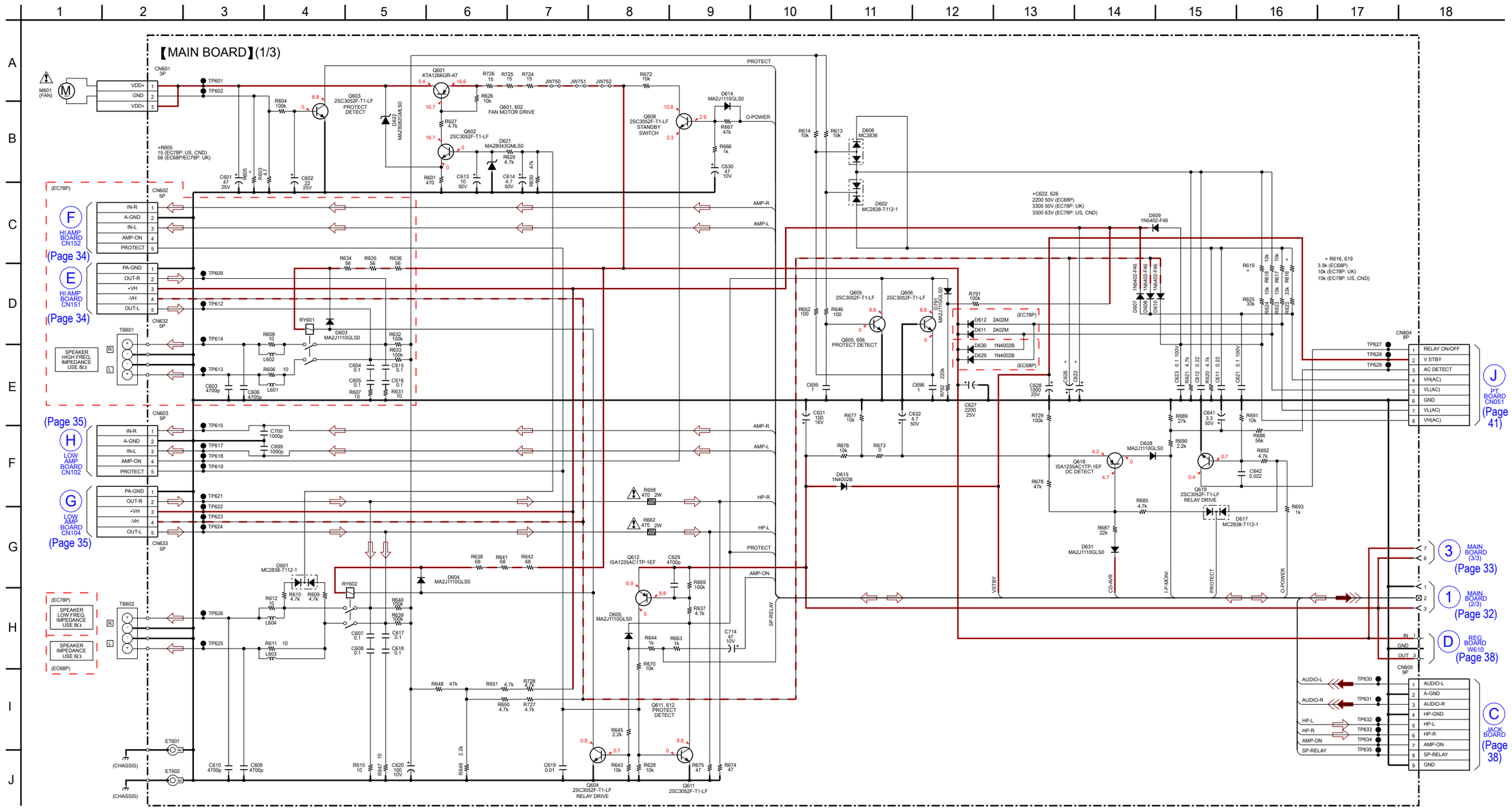
6-5. PRINTED WIRING BOARDS - MAIN Section -

• See page 27 for Circuit Boards Location.

• : Uses unleaded solder.

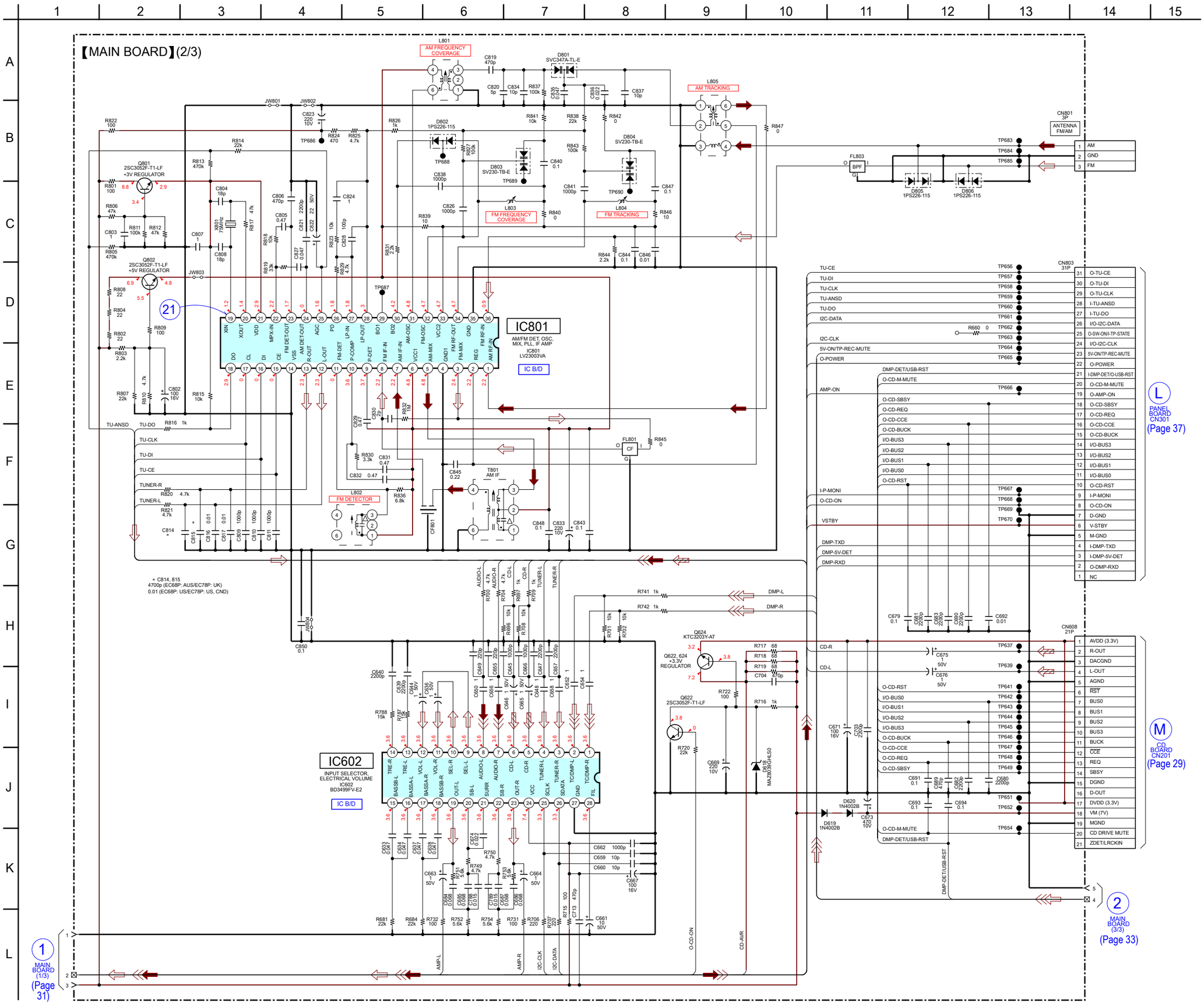


6-6. SCHEMATIC DIAGRAM - MAIN Section (1/3) -

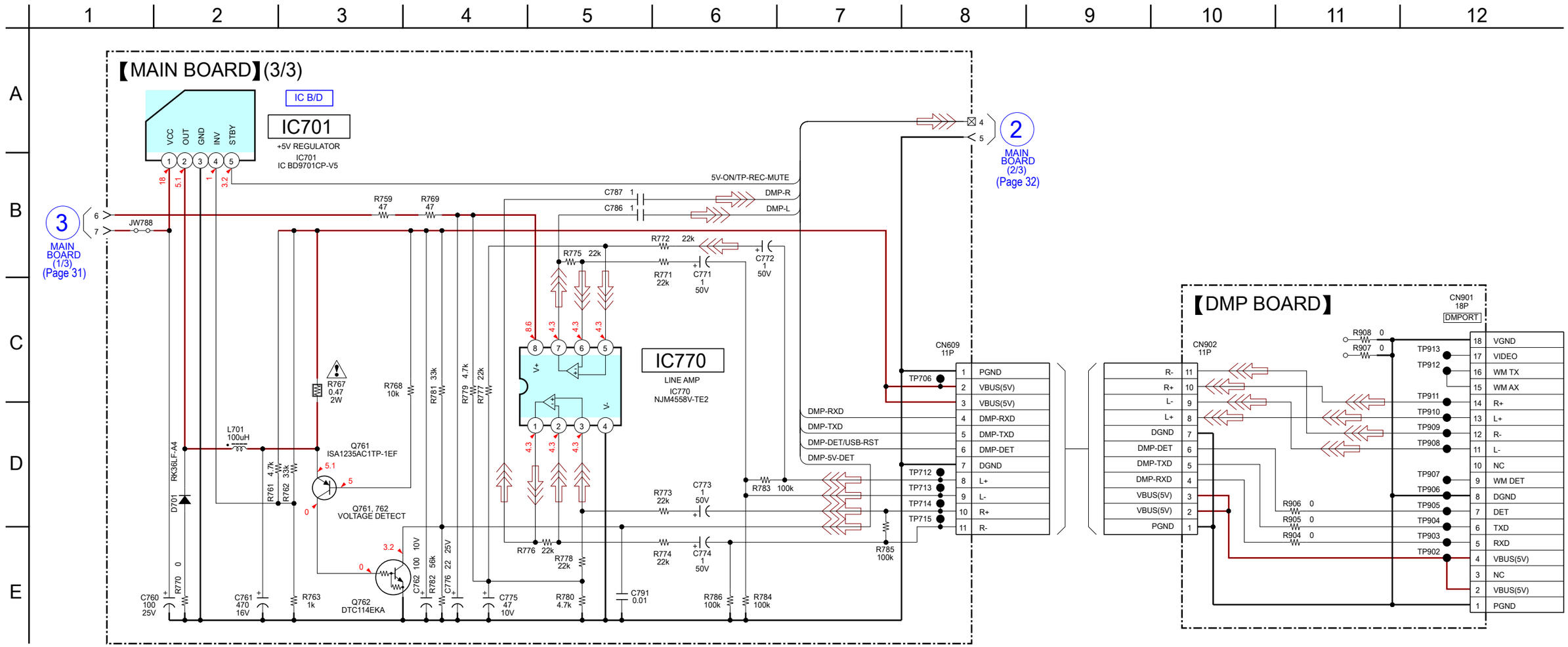


6-7. SCHEMATIC DIAGRAM - MAIN Section (2/3) -

• See page 39 for waveforms. • See page 42 for IC Block Diagrams.

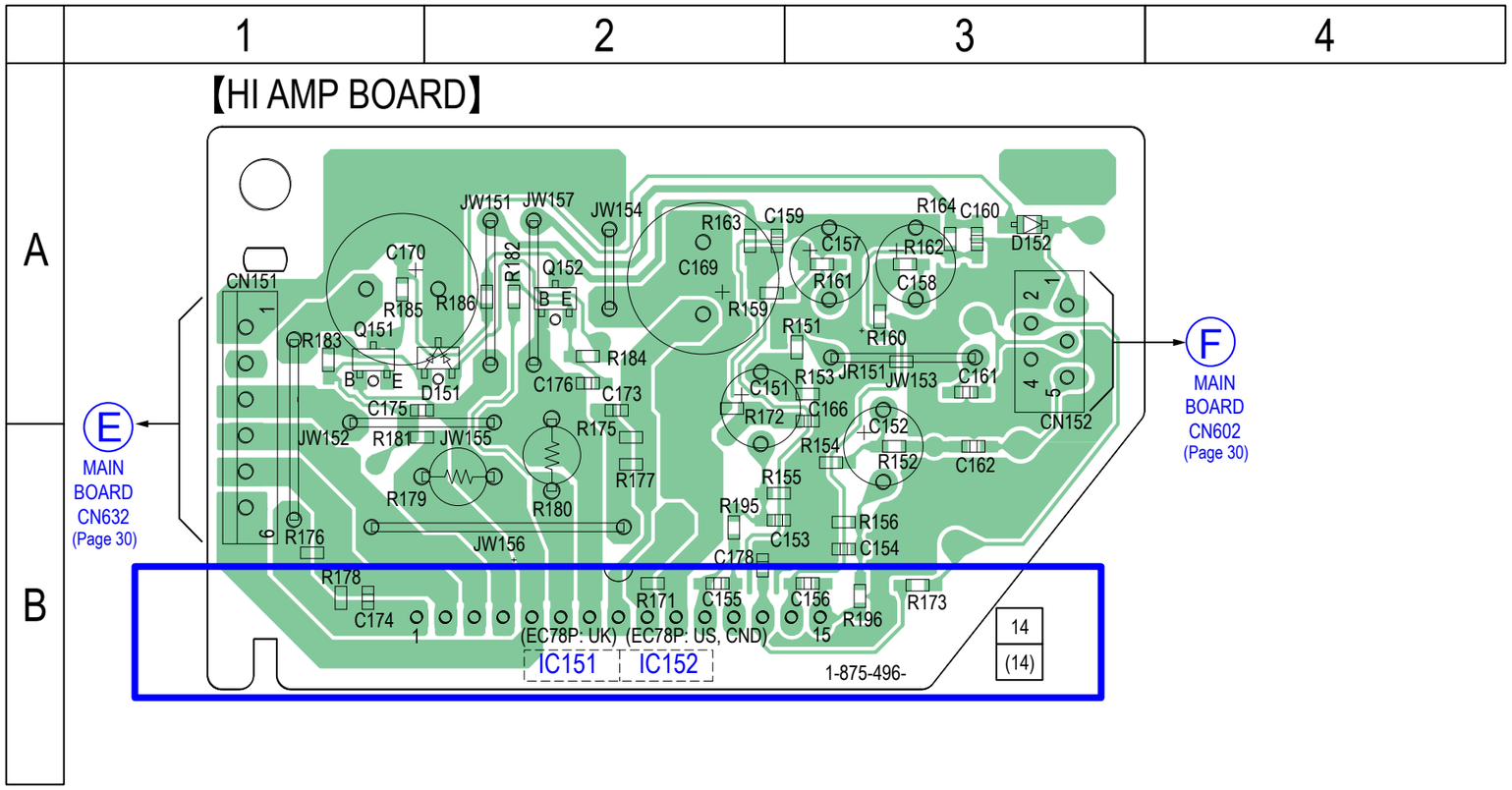


6-8. SCHEMATIC DIAGRAM - MAIN Section (3/3) - • See page 42 for IC Block Diagrams.

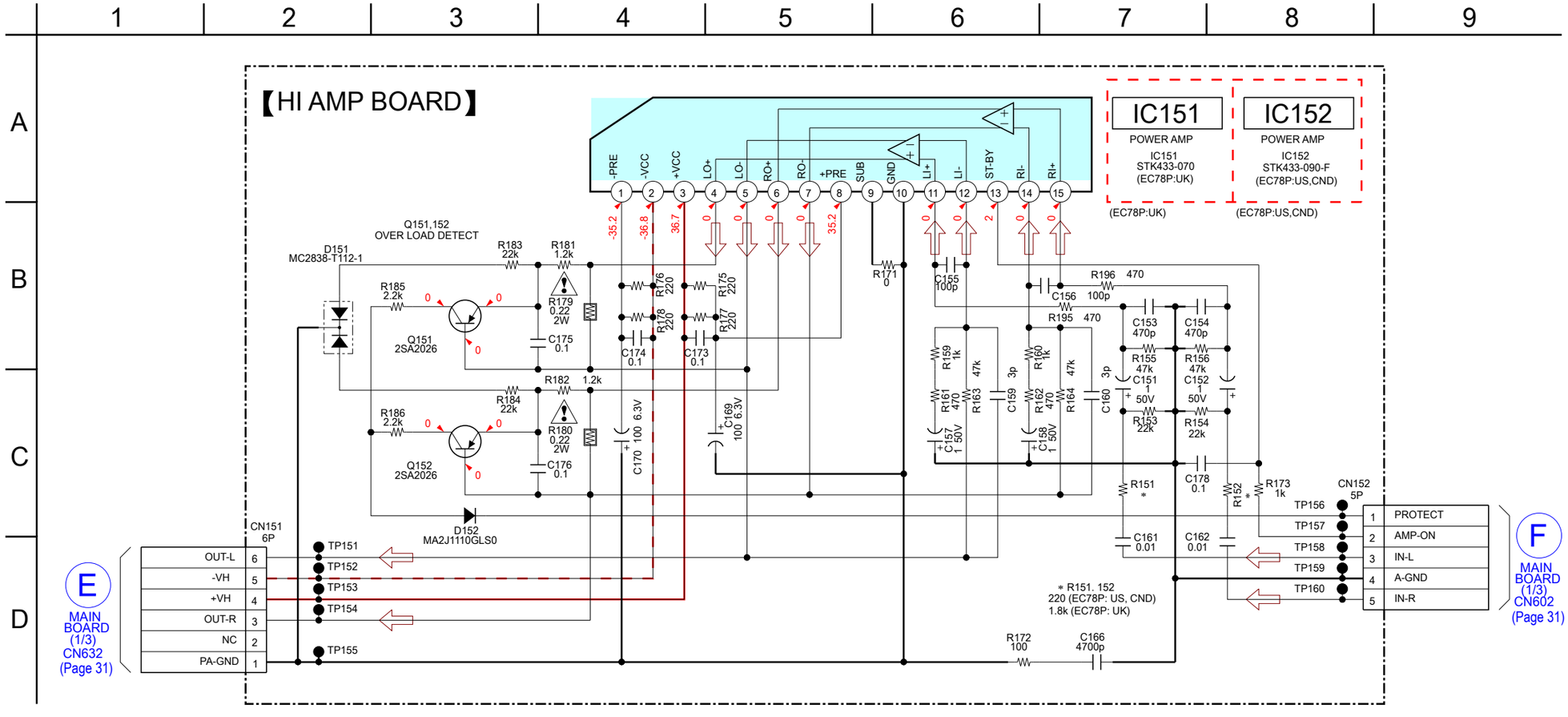


6-9. PRINTED WIRING BOARD - HI AMP Board (EC78P) -

• See page 27 for Circuit Boards Location. • : Uses unleaded solder.

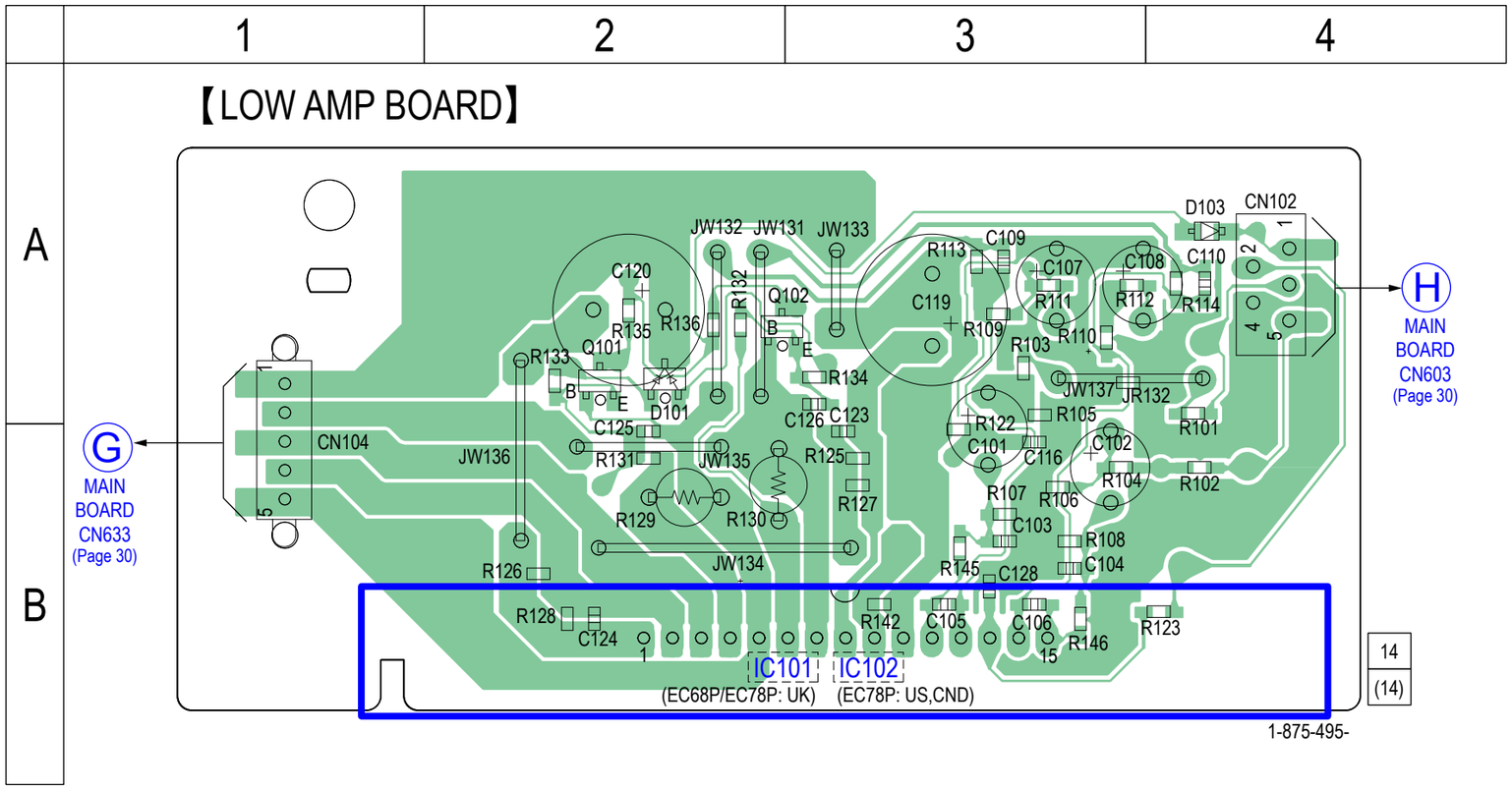


6-10. SCHEMATIC DIAGRAM - HI AMP Board (EC78P) -

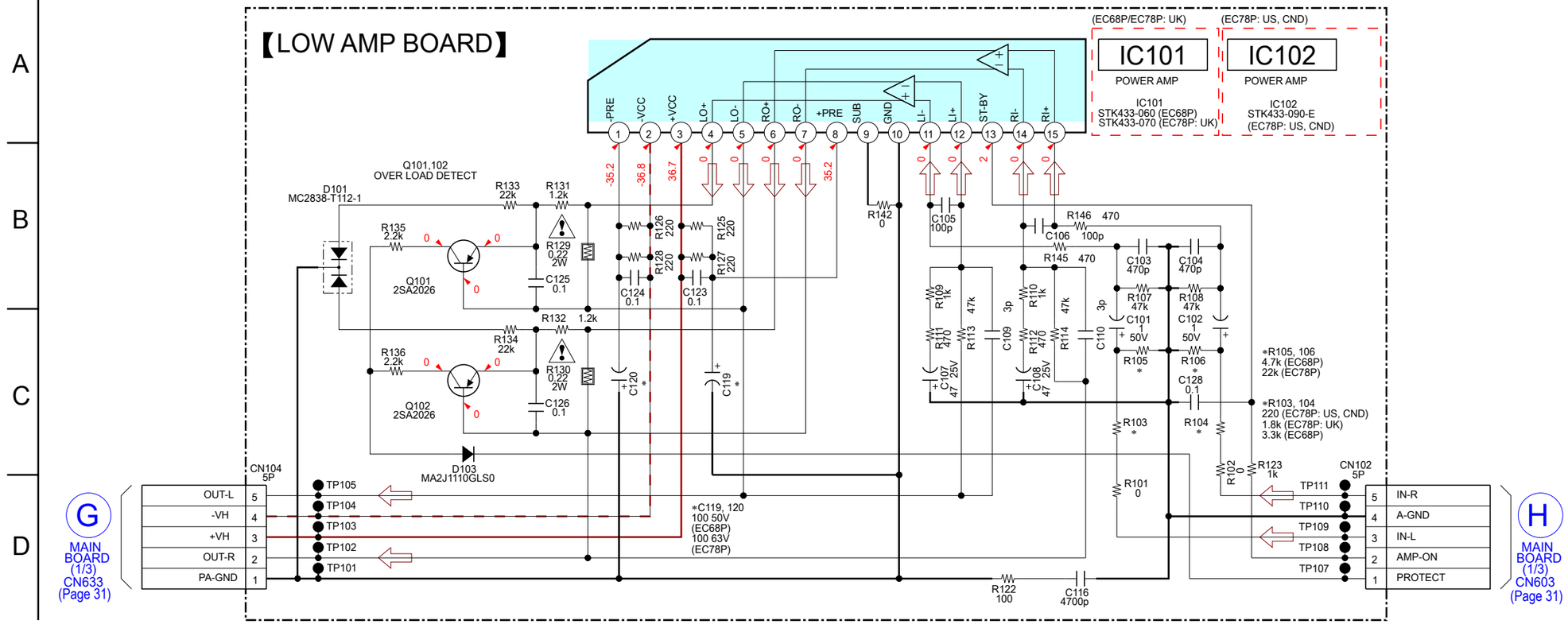


6-11. PRINTED WIRING BOARD - LOW AMP Board -

• See page 27 for Circuit Boards Location. • : Uses unleaded solder.



6-12. SCHEMATIC DIAGRAM - LOW AMP Board -



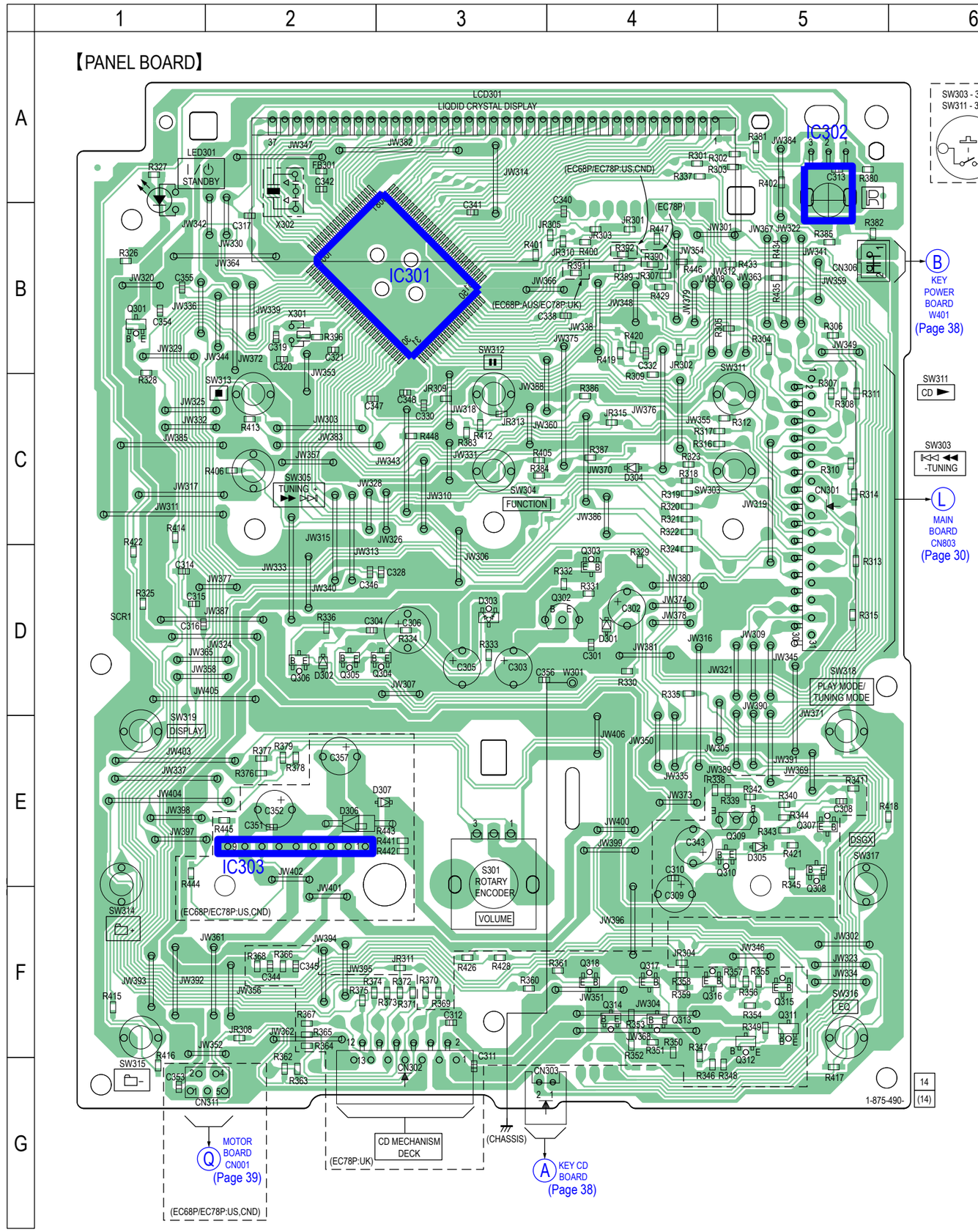
6-13. PRINTED WIRING BOARD - PANEL Board -

• See page 27 for Circuit Boards Location. • : Uses unleaded solder.

• **Semiconductor Location**

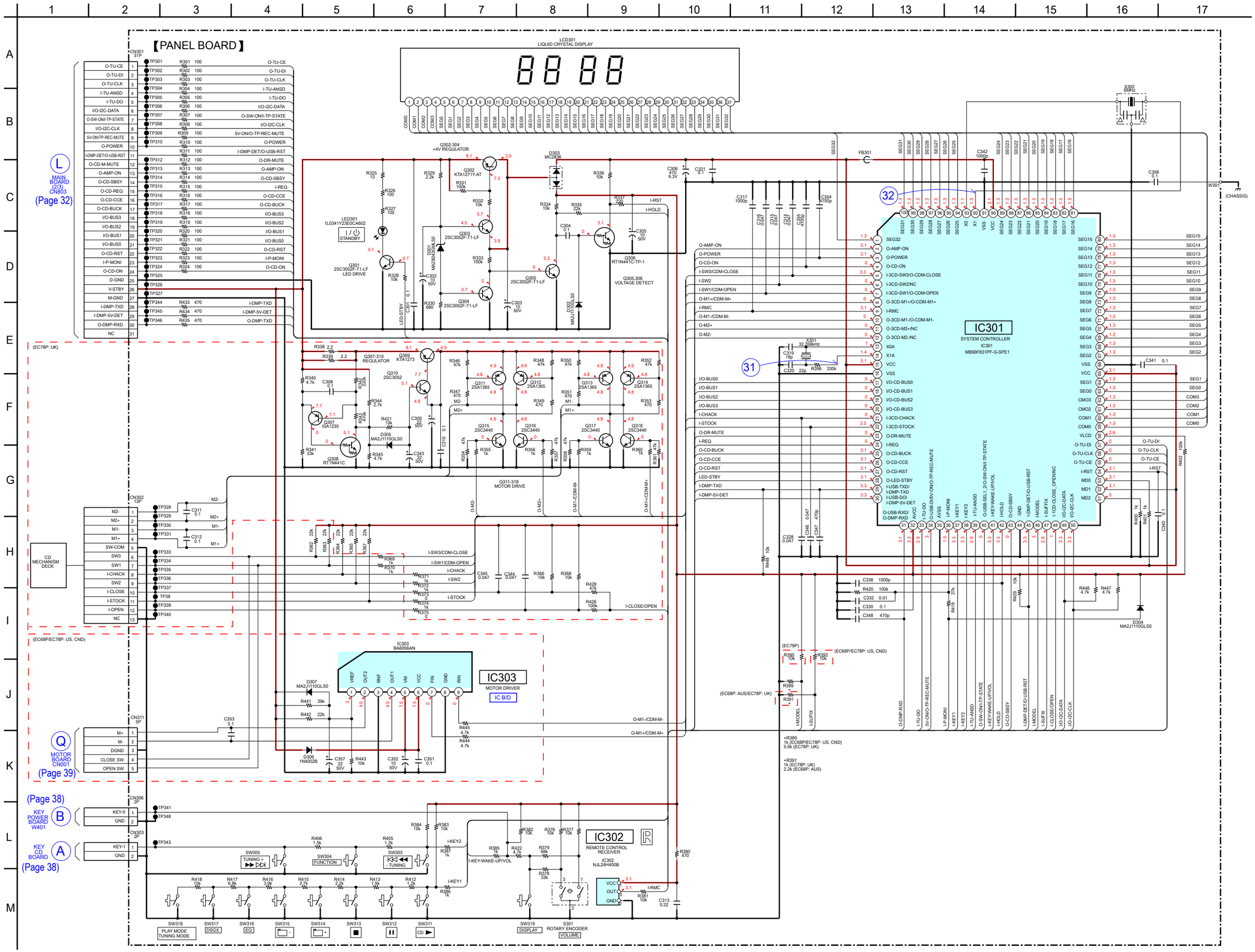
Ref. No.	Location
D301	D-4
D302	D-2
D303	D-3
D304	C-4
D305	E-5
D306	E-2
D307	E-3
IC301	B-3
IC302	A-5
IC303	E-2
LED301	A-1
Q301	B-1
Q302	D-4
Q303	D-4
Q304	D-3
Q305	D-2
Q306	D-2
Q307	E-5
Q308	E-5
Q309	E-5
Q310	E-5
Q311	F-5
Q312	F-5
Q313	F-4
Q314	F-4
Q315	F-5
Q316	F-4
Q317	F-4
Q318	F-4

【PANEL BOARD】



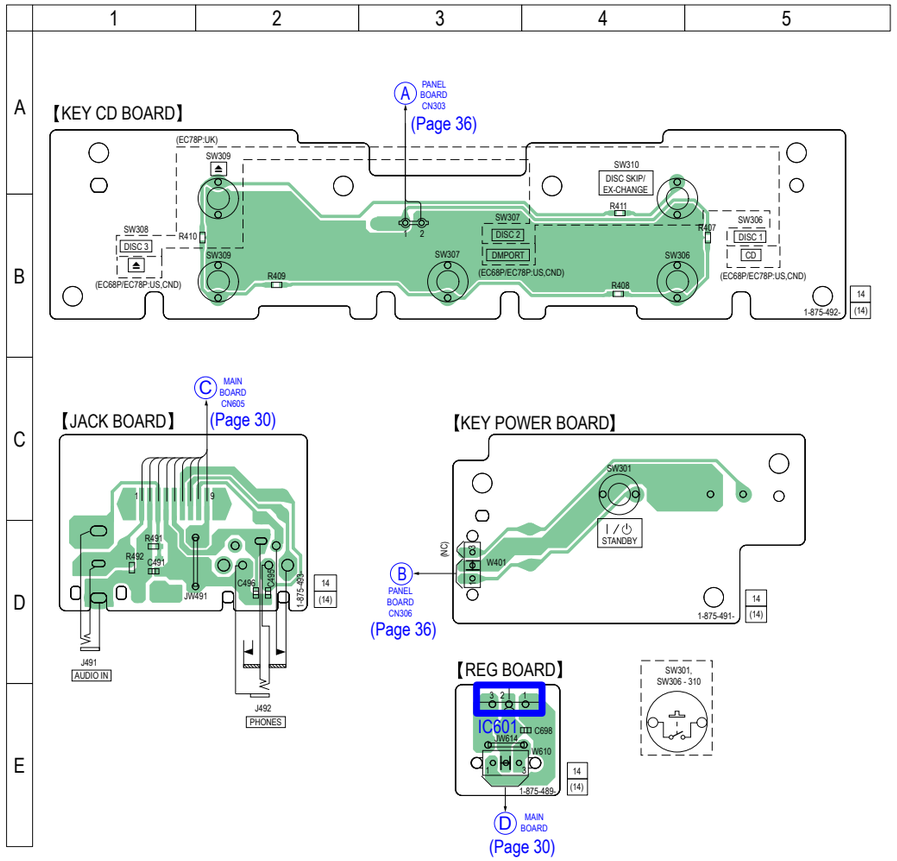
6-14. SCHEMATIC DIAGRAM - PANEL Board -

• See page 39 for waveforms. • See page 42 for IC Block Diagrams. • See page 43 for IC Pin Function Description.

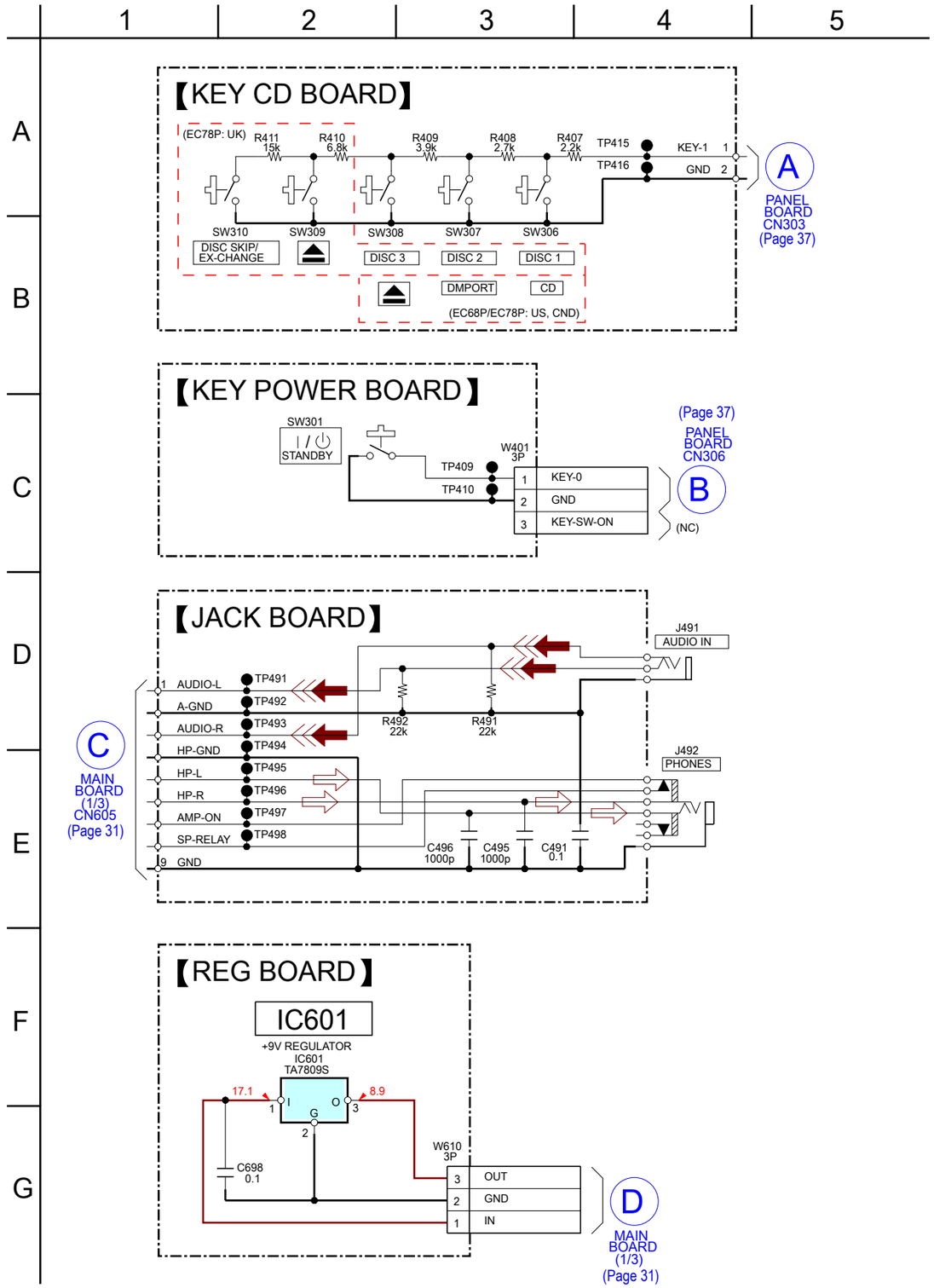


6-15. PRINTED WIRING BOARDS - KEY Section -

• See page 27 for Circuit Boards Location. • : Uses unleaded solder.

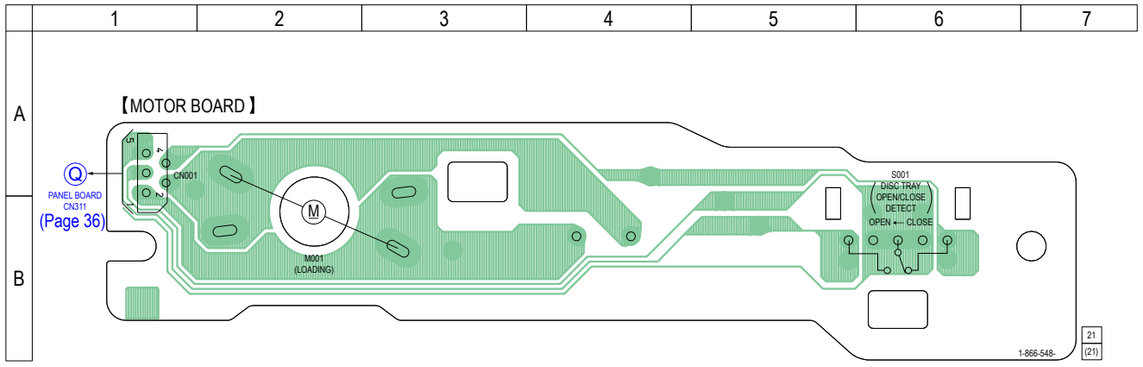


6-16. SCHEMATIC DIAGRAM - KEY Section -



6-17. PRINTED WIRING BOARD - MOTOR Board (EC68P/EC78P: US, Canadian models) -

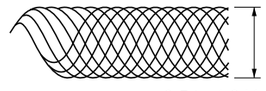
• See page 27 for Circuit Boards Location. • : Uses unleaded solder.



• Waveforms

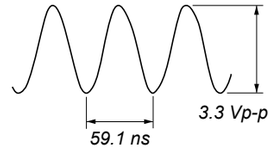
– CD Board –

① IC101 ㉛ (RFi) (CD play mode)



200 mV/DIV, 500 ns/DIV

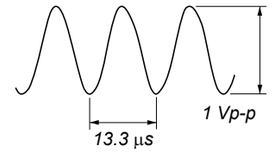
② IC101 ㉔ (XO) (CD play mode)



1 V/DIV, 20 ns/DIV

– MAIN Board –

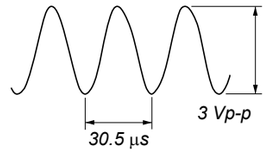
㉑ IC801 ⑲ (XIN)



500 mV/DIV, 5 µs/DIV

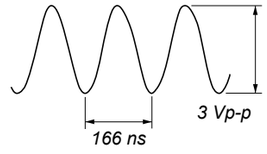
– PANEL Board –

㉛ IC301 ⑭ (X1A)



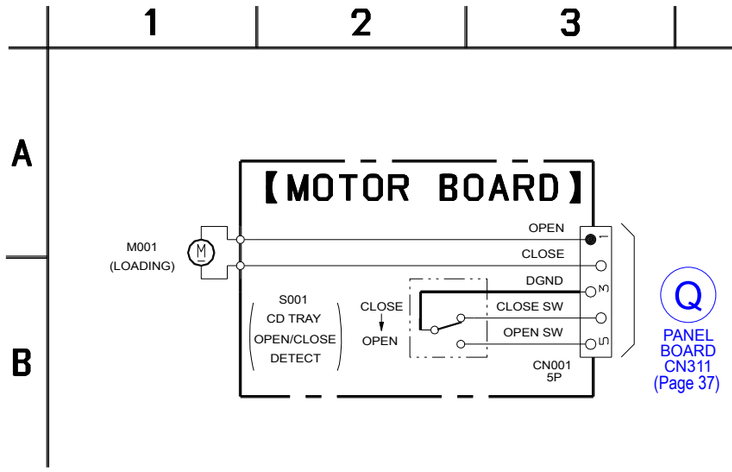
1 V/DIV, 10 µs/DIV

㉜ IC301 ㉒ (X1)



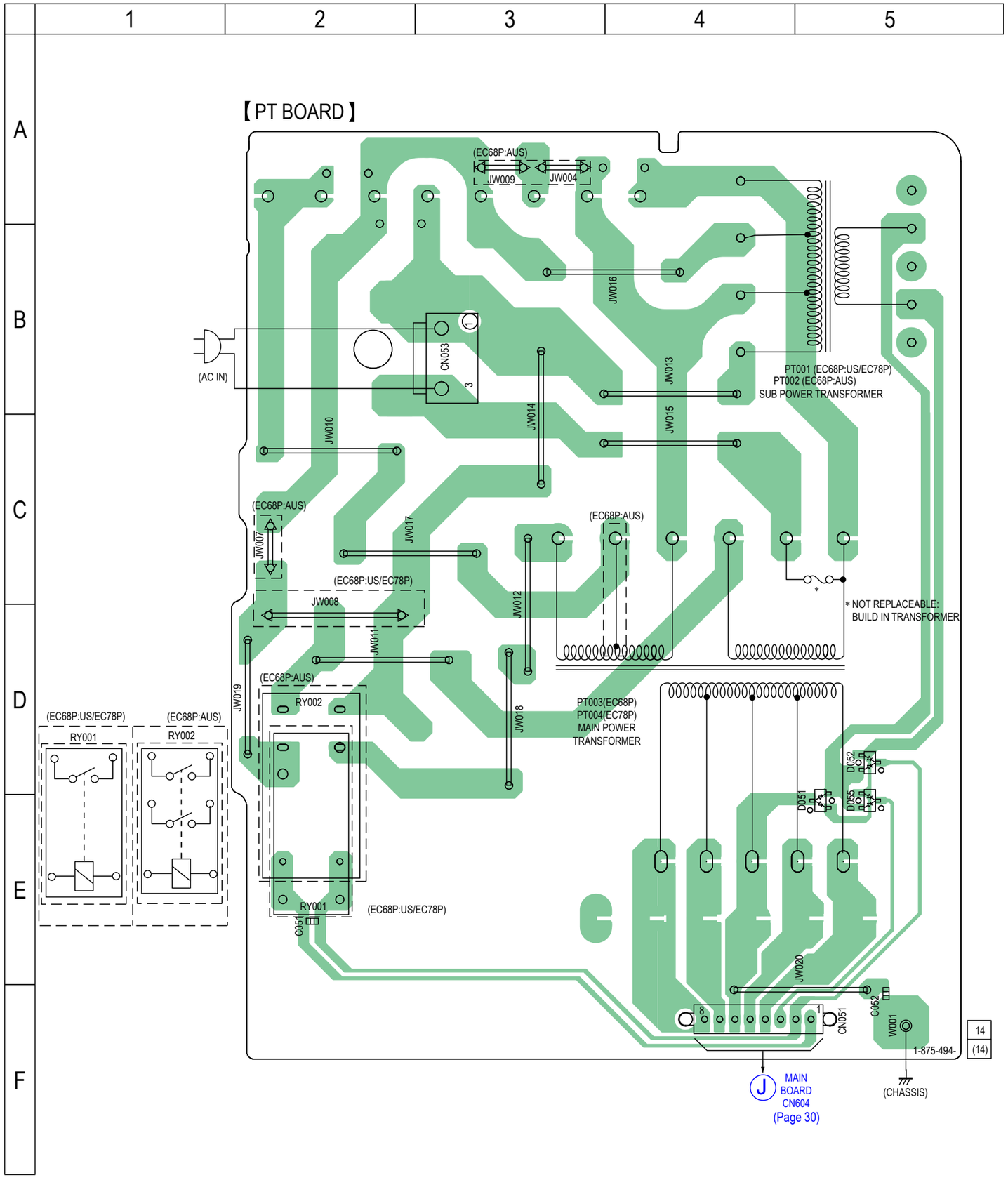
1 V/DIV, 50 ns/DIV

6-18. SCHEMATIC DIAGRAM - MOTOR Board (EC68P/EC78P: US, Canadian models) -

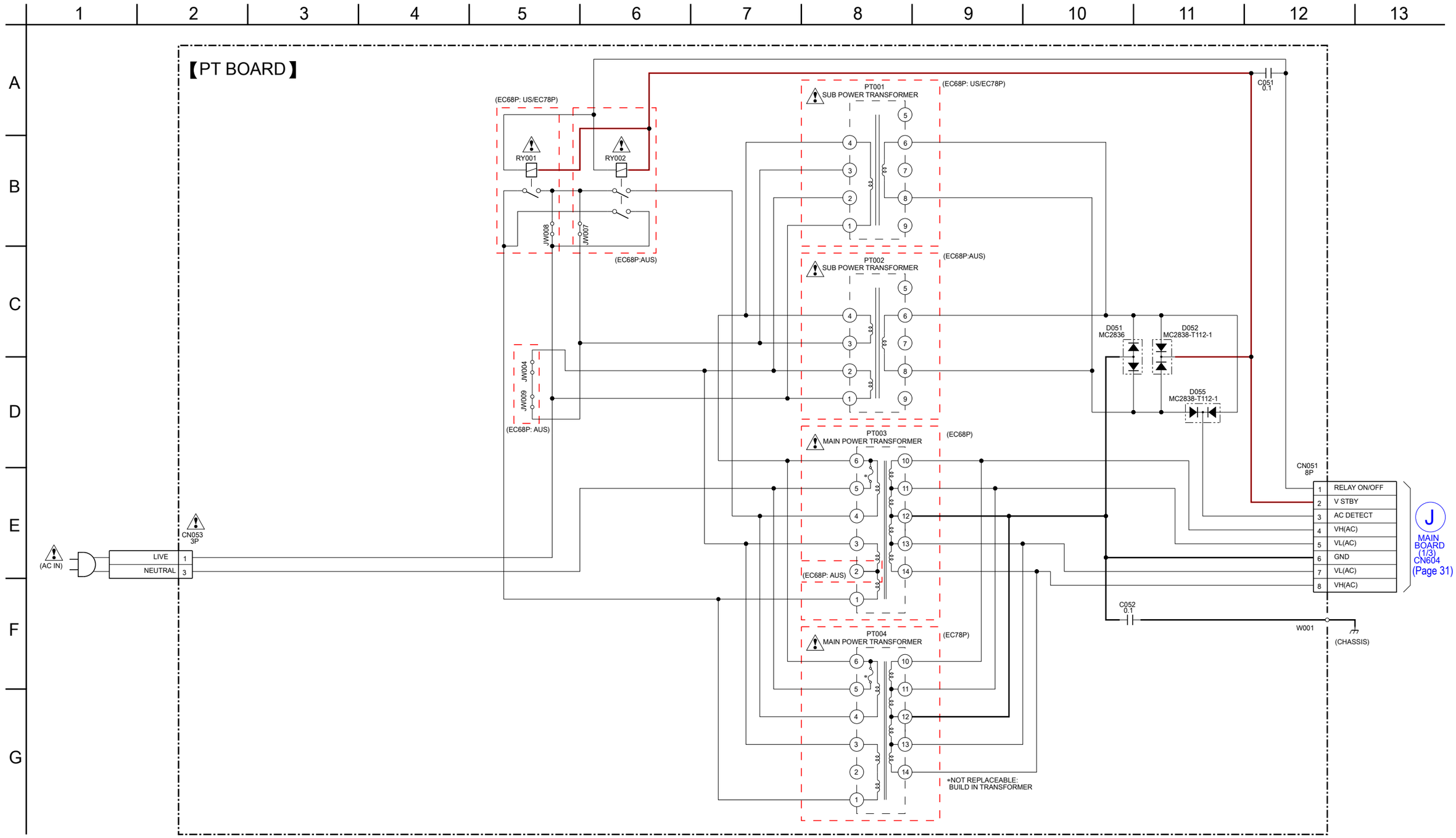


6-19. PRINTED WIRING BOARD - PT Board -

• See page 27 for Circuit Boards Location. • : Uses unleaded solder.



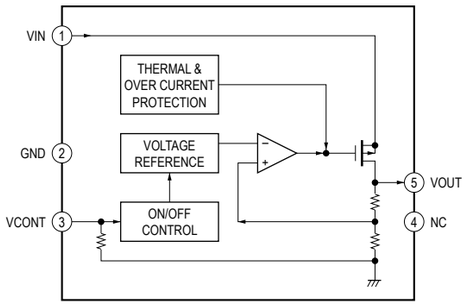
6-20. SCHEMATIC DIAGRAM - PT Board -



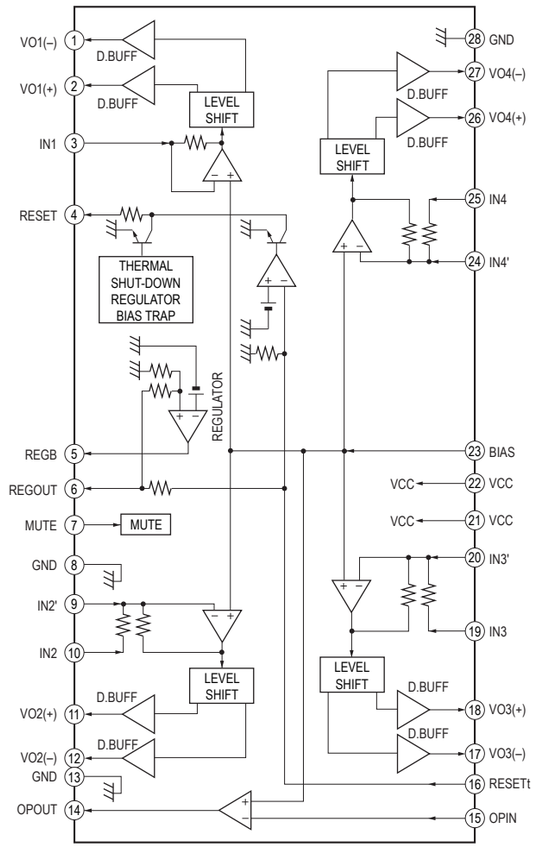
• **IC Block Diagrams**

– CD Board –

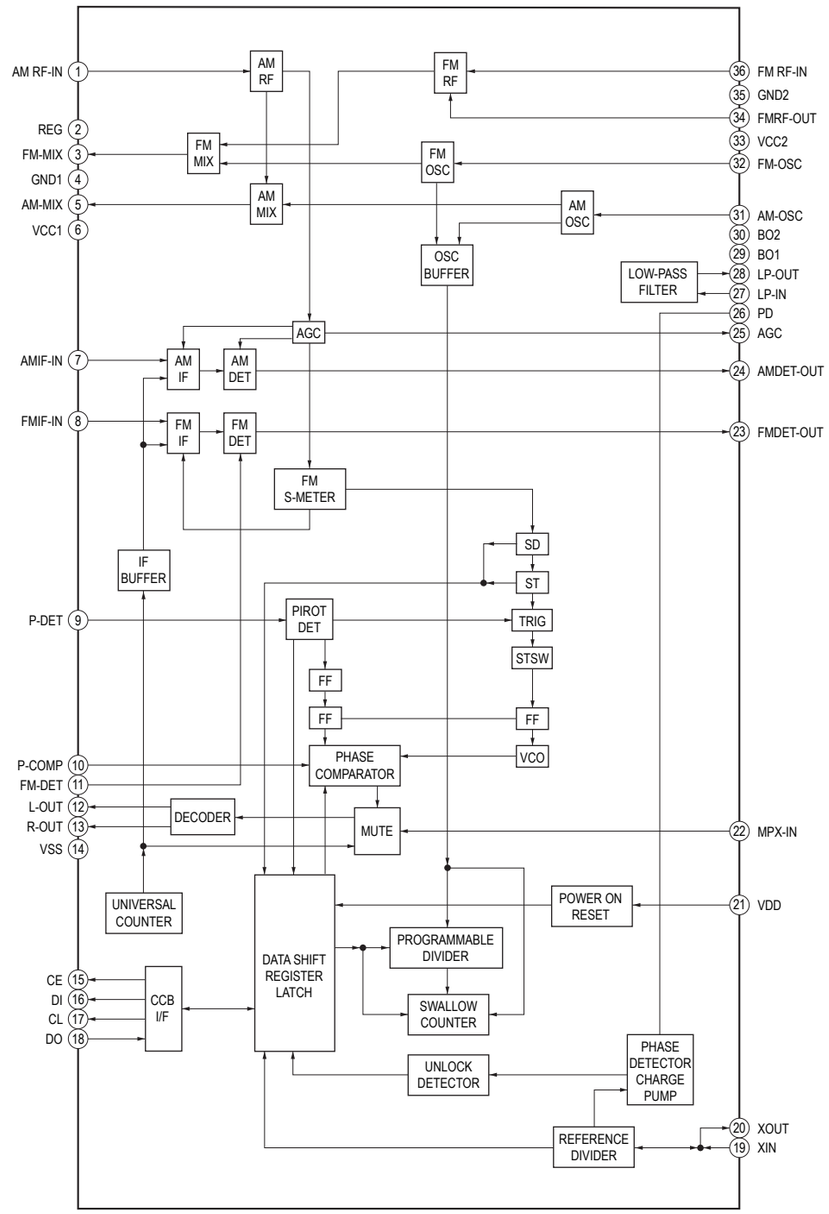
IC201 TK63115SCL-G@GT



IC401 BA5826SFP-E2

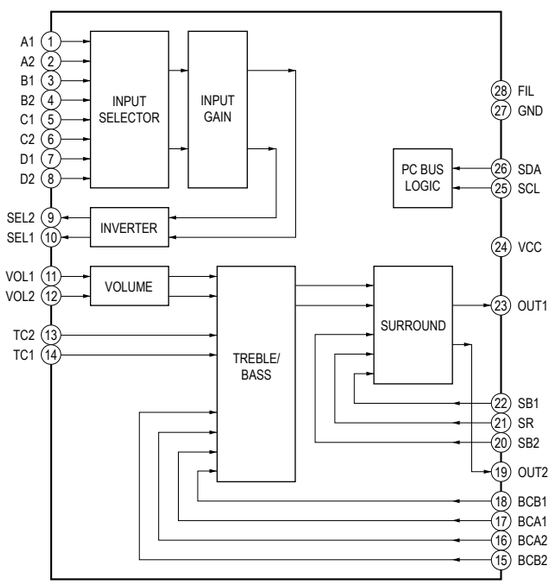


IC801 LV23003VA

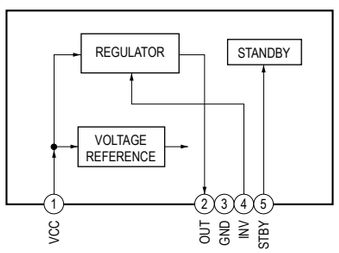


– MAIN Board –

IC602 BD3499FV-E2

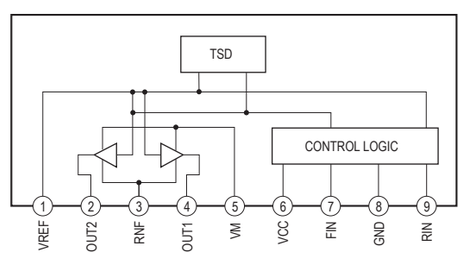


IC701 BD9701CP-V5



– PANEL Board –

IC303 BA6956AN



• **IC Pin Function Description**

CD BOARD IC101 TC94A70FG-006 (D, HZ (CD-MP3 PROCESSOR)

Pin No.	Pin Name	I/O	Description
1	AVSS3	-	Ground terminal
2	RFZi	I	RF ripple zero crossing signal input terminal
3	RFRP	O	RF ripple signal output terminal
4	SBAD/RFDC	O	Sub beam addition signal or RF peak detection signal output terminal Not used
5	FEi	O	Focus error signal output terminal Not used
6	TEi	O	Tracking error signal output terminal
7	TEZi	I	Tracking error zero crossing signal input terminal
8	AVDD3	-	Power supply terminal (+3.3 V)
9	FOo	O	Focus coil drive signal output terminal
10	TRo	O	Tracking coil drive signal output terminal
11	VREF	I	Reference voltage (+1.65V) input terminal
12	FMo	O	Sled motor drive signal output terminal
13	DMo	O	Spindle motor drive signal output terminal
14	VSSP3	-	Ground terminal
15	VCOi	I	VCO control voltage input terminal
16	VDDP3	-	Power supply terminal (+3.3 V)
17	VDD1	-	Power supply terminal (+1.5 V)
18	VSS	-	Ground terminal
19	FGiN	I	FG signal input terminal Not used
20	IO0 (/HSO)	I	Disc inner position detection signal input terminal
21	IO1 (/UHSO)	O	Not used
22	XVSS3	-	Ground terminal
23	XI	I	System clock input terminal (16.9344 MHz)
24	XO	O	System clock output terminal (16.9344 MHz)
25	XVDD3	-	Power supply terminal (+3.3 V)
26	DVSS3	-	Ground terminal
27	RO	O	Audio data (R-ch) output to the input selector
28	DVDD3	-	Power supply terminal (+3.3 V)
29	DVR	O	Reference voltage (+1.65V) output terminal
30	LO	O	Audio data (L-ch) output to the input selector
31	DVSS3	-	Ground terminal
32	VDDT3	-	Power supply terminal (+3.3 V)
33	VSS1	-	Ground terminal
34	VDD1	-	Power supply terminal (+1.5 V)
35	VDDM1	-	Power supply terminal (+1.5 V)
36	SRAMSTB	I	S-RAM standby mode control signal input terminal Fixed at "L" in this set
37	XRST	I	Reset signal input from the system controller "L": reset
38, 39	BUS0, BUS1	I	Serial data input from the system controller
40	BUS2 (SO)	I	Serial data input from the system controller
41	BUS3 (SI)	I	Serial data input from the system controller
42	BUCK (CLK)	I	Serial data transfer clock signal input from the system controller
43	XCCE	I	Chip enable signal input from the system controller
44	TEST	I	Setting terminal for test mode Normally fixed at "L"
45	IRQ	I	Interrupt request signal input terminal Not used
46	AoUT3 (PO4)	O	Request signal output terminal Not used
47	AoUT2 (PO5)	O	Audio data output terminal Not used
48	PIO0	O	Request signal output to the system controller
49, 50	PIO1, PIO2	O	Not used
51	PIO3	I	Gate signal input terminal Not used
52	VSS1	-	Ground terminal
53	VDDT3	-	Power supply terminal (+3.3 V)
54	SBSY	O	Subcode block sync signal output to the system controller
55	SBOK/FOK	O	Not used
56	IPF	O	Not used
57	SFSY/LOCK	O	Not used
58	ZDET	O	Zero detection signal output terminal Not used
59	GPIN	I	Not used
60	MS	I	Microcomputer interface mode selection signal input terminal Fixed at "H" in this set

Pin No.	Pin Name	I/O	Description
61	DOUT (PO6)	O	Digital audio data output terminal Not used
62	AOUT (PO7)	O	Audio data output terminal Not used
63	BCK (PO8)	O	Bit clock signal output terminal Not used
64	LRCK (PO9)	O	L/R sampling clock signal output terminal Not used
65	AIN (PI4)	I	Digital audio data input terminal Not used
66	BCKi (PI5)	I	Bit clock signal input terminal Not used
67	LRCKi (PI6)	I	L/R sampling clock signal input terminal Not used
68	VDD1	-	Power supply terminal (+1.5 V)
69	VSS	-	Ground terminal
70	AWRC	-	Not used
71	PVDD3	-	Power supply terminal (+3.3 V)
72	PDO	O	Phase error margin signal between EFM signal and PLCK signal output terminal
73	TMAXS	O	TMAX detection signal output terminal Not used
74	TMAX	O	TMAX detection signal output terminal
75	LPFN	I	Inverted signal input from the operation amplifier for PLL loop filter
76	LPFo	O	Signal output from the operation amplifier for PLL loop filter
77	PVREF	I	Reference voltage (+1.65V) input terminal
78	VCOF	O	VCO filter output terminal
79	PVSS3	-	Ground terminal
80	SLCo	O	EFM slice level output terminal
81	RFi	I	RF signal input terminal
82	RFRPi	I	RF ripple signal input terminal
83	RFEQo	O	EFM slice level output terminal
84	VRo	O	Reference voltage (+1.65V) output terminal
85	RESiN	O	External resistor connection terminal
86	VMDiR	O	Reference voltage (+1.65V) output terminal for automatic power control circuit
87	TESTR	O	Low-pass filter terminal for RFEQO offset correction
88	AGCi	I	RF signal amplitude adjustment amplification input terminal
89	RFo	O	RF signal generation amplification output terminal
90	RVDD3	-	Power supply terminal (+3.3 V)
91	LDo	O	Laser diode on/off control signal output to the automatic power control circuit "H": laser diode on
92	MDi	I	Light amount monitor input from the laser diode of optical pick-up block
93	RVSS3	-	Ground terminal
94	FNi2 (C)	I	Main beam (C) input from the optical pick-up block
95	FNi1 (A)	I	Main beam (A) input from the optical pick-up block
96	FPi2 (D)	I	Main beam (D) input from the optical pick-up block
97	FPi1 (B)	I	Main beam (B) input from the optical pick-up block
98	TPi (F)	I	Sub beam (F) input from the optical pick-up block
99	TNPC	O	External capacitor connection terminal
100	TNi (E)	I	Sub beam (E) input from the optical pick-up block

PANEL BOARD IC301 MB90F831PF-G-SPE1 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	SEG32	O	Segment drive signal output to the liquid crystal display
2	O-AMP-ON	O	Relay drive signal output terminal (for speaker)
3	O-POWER	O	Main power on/off control signal output terminal "H": on
4	O-CD-ON	O	CD power on/off control signal output terminal "H": on
5 to 7	I-3CD-SW3/O-CDM-CLOSE, I-3CD-SW2/NC, I-3CD-SW1/O-CDM-OPEN	I	Detection switch input terminal
8	O-3CD-M1+/O-CDM-M1+	O	Motor drive signal output terminal
9	I-RMC	I	Remote control signal input from the remote control receiver
10	O-3CD-M1-/O-CDM-M1-	O	Motor drive signal output terminal
11, 12	O-3CD-M2+/NC, O-3CD-M2-/NC	O	Motor drive signal output terminal
13	X0A	I	Sub system clock input terminal (32.768 kHz)
14	X1A	O	Sub system clock output terminal (32.768 kHz)
15	VCC	-	Power supply terminal (+3.1V)
16	VSS	-	Ground terminal
17 to 20	I/O-CD-BUS0 to I/O-CD-BUS3	O	Serial data output to the CD-MP3 processor
21	I-3CD-CHACK	I	Disc chucking detection switch input from the CD mechanism deck (EC78P: UK model)
22	I-3CD-STOCK	I	Disc stocking detection switch input from the CD mechanism deck (EC78P: UK model)
23	O-DR-MUTE	O	Muting signal output to the motor/coil driver
24	I-REQ	I	Request signal input from the CD-MP3 processor
25	O-CD-BUCK	O	Serial data transfer clock signal output to the CD-MP3 processor
26	O-CD-CCE	O	Chip enable signal output to the CD-MP3 processor
27	O-CD-RST	O	System reset signal output to the CD-MP3 processor "L": reset
28	O-LED-STBY	O	LED drive signal output terminal for STANDBY indicater
29	I-USB-TXD/I-DMP-TXD	I	Serial data input from the DMPORT connector
30	I-USB-DO/I-DMP-5V-DET	I	Power voltage detection signal input terminal
31	O-USB-RXD/O-DMP-RXD	O	Serial data output to the DMPORT connector
32	AVCC	-	Power supply terminal (+3.1V)
33	I-TU-DO	I	Serial data input from the AM/FM DET
34	O-USB-DI/5V-ON/O-TP-REC-MUTE	O	Power on/off control signal output terminal
35	AVSS	-	Ground terminal
36	I-P-MONI	I	Power monitor signal input terminal
37, 38	I-KEY1, I-KEY2	I	Front panel key input terminal (A/D input)
39	I-TU-ANSD	I	Power monitor signal input terminal
40	O-USB-SEL1_2/O-SW-ON/I-TP-STATE	I	Tape syate detection signal input terminal Not used
41	I-KEY-WAKE-UP/VOL	I	System wake up signal input terminal
42	I-HOLD	I	Hold signal input terminal
43	O-CD-SBSY	I	Subcode block sync signal input from the CD-MP3 processor
44	GND	-	Ground terminal
45	I-DMP-DET/O-USB-RST	I	DMPORT connector detection signal input terminal
46	I-MODEL	I	Model setting terminal
47	I-SUFFIX	I	Suffix setting terminal
48	I-1CD-CLOSE_OPEN/NC	I	CD table open/close detection signal input terminal (EC78P: UK model)
49	I/O-I2C-DATA	I/O	Two-way serial data bus with the electrical volume
50	I/O-I2C-CLK	O	Serial data transfer clock signal output to the electrical volume
51 to 53	MD2 to MD0	-	Not used
54	I-RST	I	Reset signal input from the voltage detect "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
55	O-TU-CE	O	Chip enable signal output to the FM/AM DET
56	O-TU-CLK	O	Serial data transfer clock signal output to the FM/AM DET

Pin No.	Pin Name	I/O	Description
57	O-TU-DI	O	Serial data output to the FM/AM DET
58	VLCD	-	Terminal for doubler circuit capacitor connection to develop liquid crystal display drive voltage
59 to 62	COM0, COM1, CMO2, CMO3	O	Common drive signal output to the liquid crystal display
63, 64	SEG0, SEG1	O	Segment drive signal output to the liquid crystal display
65	VCC	-	Power supply terminal (+3.1V)
66	VSS	-	Ground terminal
67 to 89	SEG2 to SEG24	O	Segment drive signal output to the liquid crystal display
90	VCC	-	Power supply terminal (+3.1V)
91	VSS	-	Ground terminal
92	X1	I	Main system clock output terminal (6 MHz)
93	X0	O	Main system clock input terminal (6 MHz)
94 to 100	SEG25 to SEG31	O	Segment drive signal output to the liquid crystal display

SECTION 7
EXPLODED VIEWS

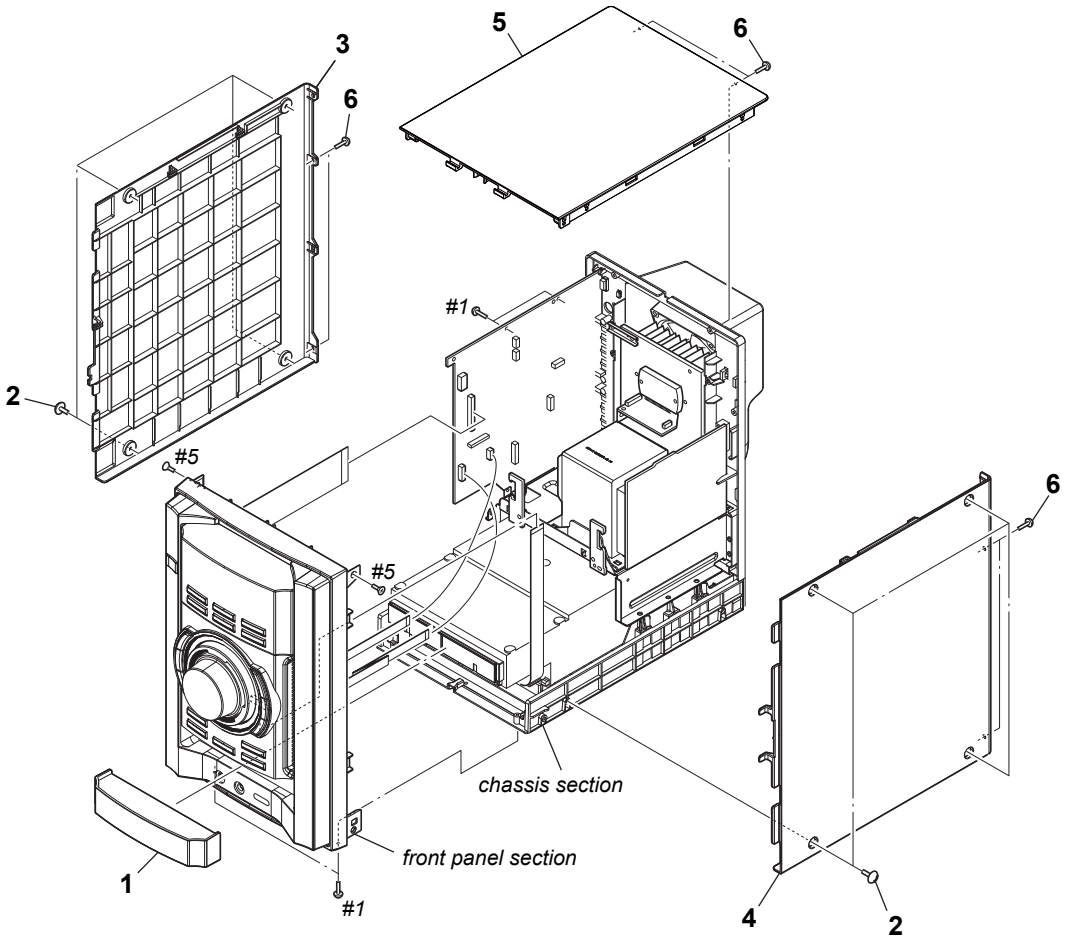
Note:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts of Color ↑ Cabinet's Color
- Accessories are given in the last of the electrical parts list.
- Abbreviation
  AUS : Australian model
  CND : Canadian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

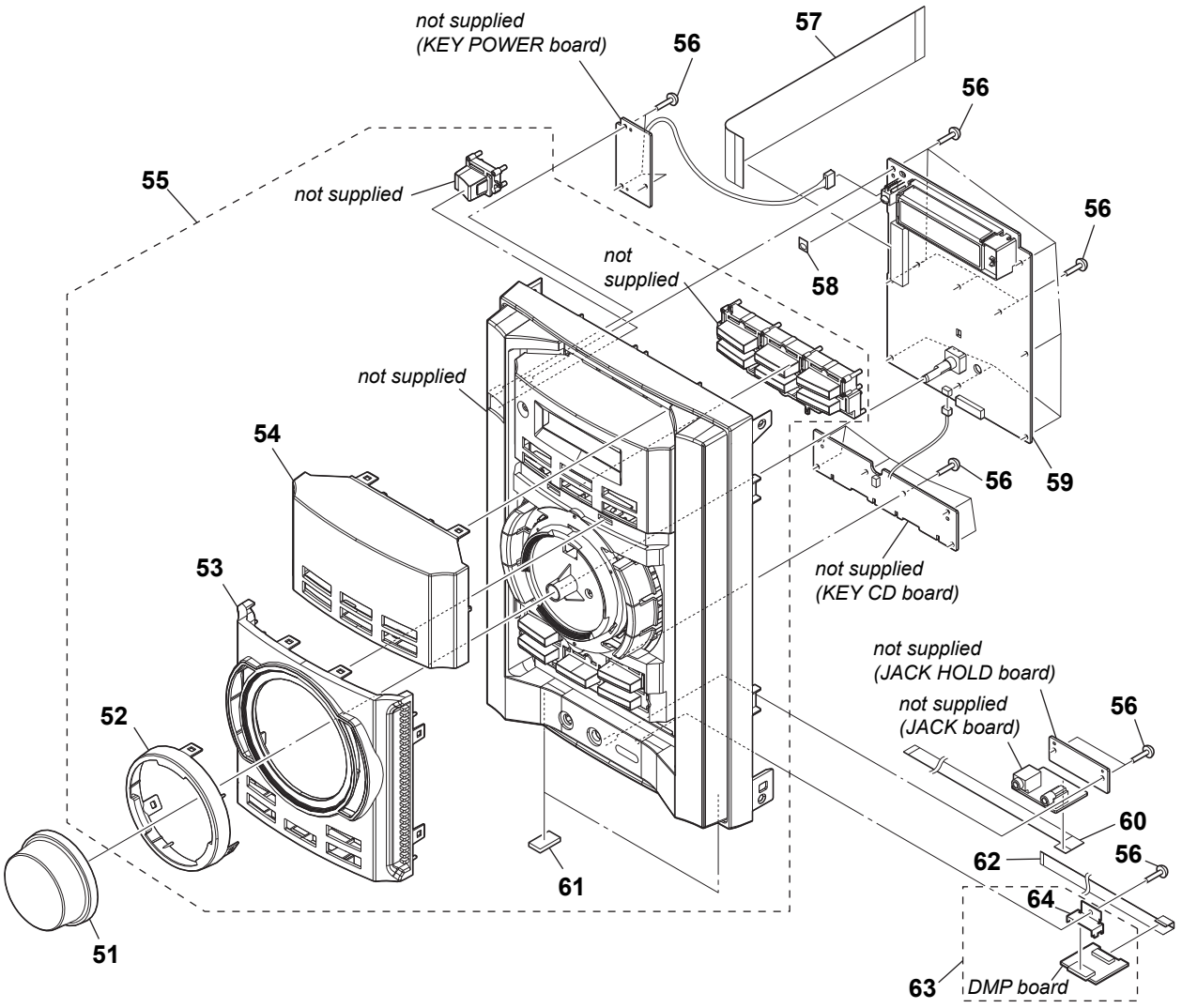
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-276-203-01	DOOR (CD) (EC78P: UK)	
1	3-283-114-01	DOOR (1CD) (EC68P/EC78P: US, CND)	
2	3-363-099-32	SCREW (CASE 3 TP2)	
3	2-890-831-01	PANEL (L), SIDE (EC68P: US/EC78P: US, CND)	
3	2-890-831-11	PANEL (L), SIDE (EC68P: AUS/EC78P: UK)	
4	2-890-830-01	PANEL (R), SIDE (EC68P: US)	
4	2-890-830-11	PANEL (R), SIDE (EC68P: AUS/EC78P: UK)	
4	2-890-830-21	PANEL (R), SIDE (EC78P: US, CND)	
5	2-890-829-01	PANEL (TOP) (EC68P: US/EC78P: US, CND)	
5	2-890-829-11	PANEL (TOP) (EC68P: AUS/EC78P: UK)	
6	3-254-143-11	SCREW (B3), (+) BV TAPPING	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#5	7-685-247-14	SCREW +KTP 3X10 TYPE2 NON-SLIT	

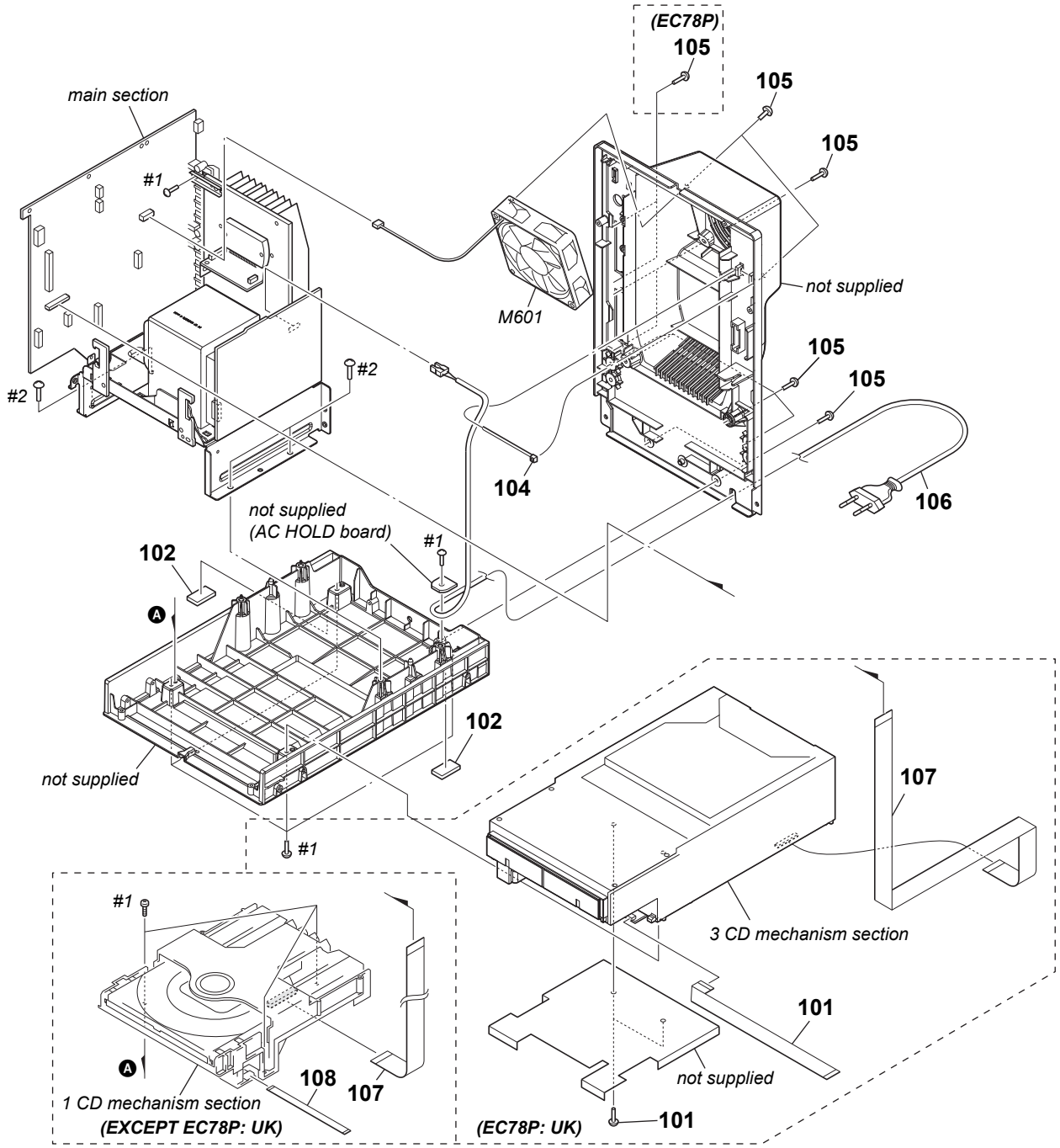
7-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	3-276-202-01	KNOB (VOL)	
52	3-276-204-01	RING (VOL) (EC78P: UK)	
52	3-276-204-11	RING (VOL) (EC68P/EC78P: US, CND)	
53	3-276-201-01	PLATE, ORNAMENTAL (EC78P: UK)	
53	3-285-284-01	PLATE, ORNAMENTAL (1CD) (EC68P/EC78P: US, CND)	
54	3-276-198-01	WINDOW (EC68P: AUS)	
54	3-276-198-31	WINDOW (EC68P: US)	
54	3-276-198-11	WINDOW (EC78P: US, CND)	
54	3-276-198-71	WINDOW (EC78P: UK)	
55	A-1452-956-A	FRONT PANEL ASSY (EC68P: US)	
55	A-1452-957-A	FRONT PANEL ASSY (EC68P: AUS)	
55	A-1418-862-A	PANEL ASSY, FRONT (EC78P: UK)	

Ref. No.	Part No.	Description	Remark
55	A-1418-863-A	PANEL ASSY, FRONT (EC78P: US, CND)	
56	4-951-620-01	SCREW (2.6X8), +BVTP	
57	1-835-338-21	CABLE, FLEXIBLE FLAT (31 CORE)	
58	3-297-298-01	SHEET (RM)	
59	A-1379-659-A	PANEL BOARD, COMPLETE (EC78P: US, CND)	
59	A-1379-717-A	PANEL BOARD, COMPLETE (EC68P: US)	
59	A-1426-107-A	PANEL BOARD, COMPLETE (EC78P: UK)	
59	A-1426-165-A	PANEL BOARD, COMPLETE (EC68P: AUS)	
60	1-831-774-21	CABLE, FLEXIBLE FLAT (9 CORE)	
61	4-225-252-01	CUSHION (FOOT)	
62	1-835-336-21	CABLE, FLEXIBLE FLAT (11 CORE)	
63	A-1379-815-A	DMP BOARD, COMPLETE	
64	3-276-209-01	BRACKET (DMPORT)	

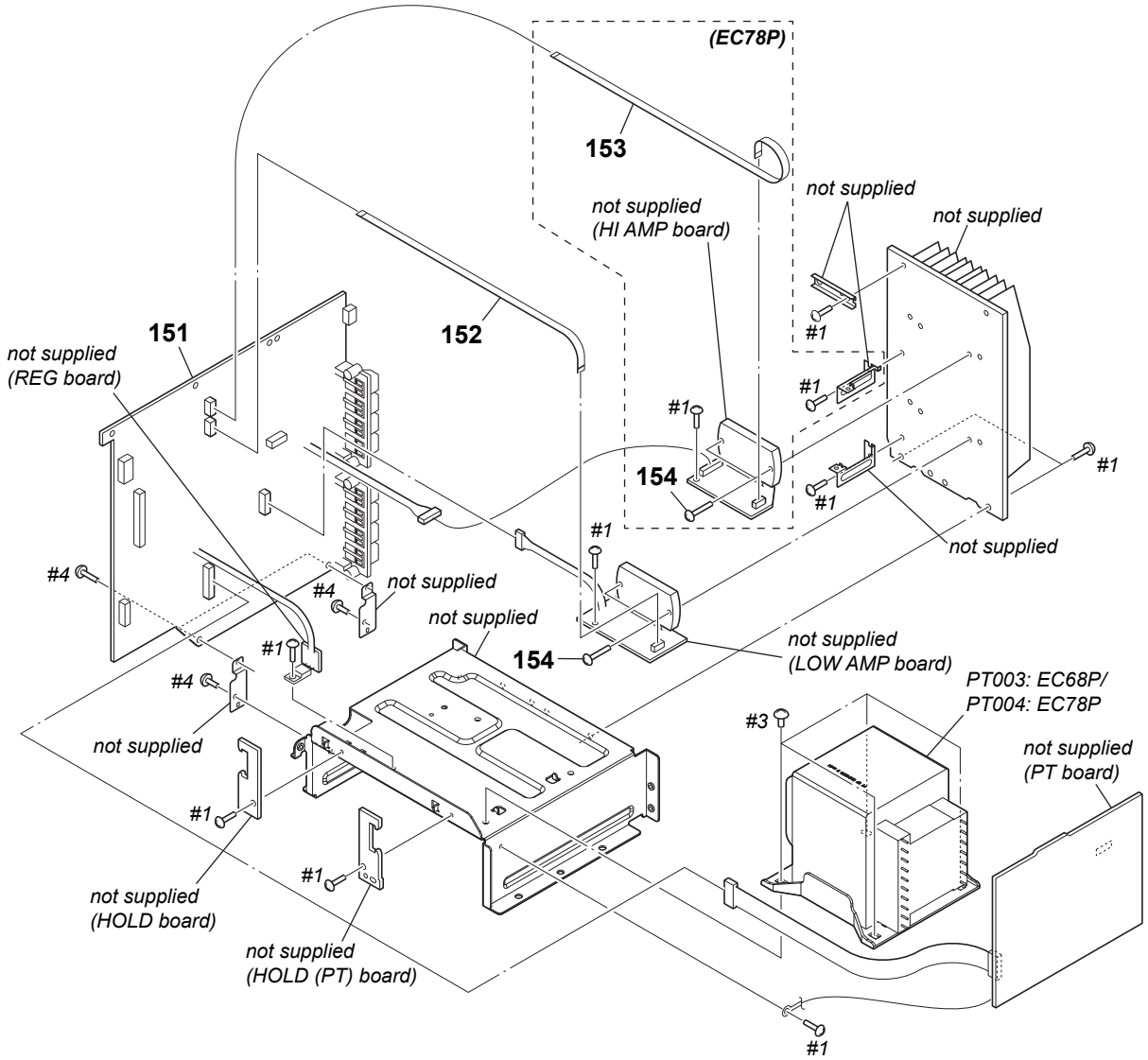
7-3. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
101	1-832-838-21	CABLE, FLEXIBLE FLAT (13 CORE) (EC78P: UK)	
102	4-225-252-01	CUSHION (FOOT)	
104	3-701-748-00	CLAMP	
105	3-254-143-11	SCREW (B3), (+) BV TAPPING	
⚠ 106	1-769-744-81	CORD, POWER (EC78P: UK)	
⚠ 106	1-834-967-21	CORD, POWER (EC68P: AUS)	
⚠ 106	1-834-978-11	CORD, POWER (EC68P: US/EC78P: US, CND)	
107	1-834-181-21	CABLE, FLEXIBLE FLAT (21 CORE) (EC78P: UK)	
107	1-835-334-21	CABLE, FLEXIBLE FLAT (21 CORE)	

Ref. No.	Part No.	Description	Remark
			(EC68P/EC78P: US, CND)
108	1-832-666-21	CABLE, FLEXIBLE FLAT (5 CORE)	
			(EC68P/EC78P: US, CND)
109	3-229-336-11	SCREW, +BVWH TAPPING (EC78P: UK)	
M601	1-787-400-11	D.C. FAN (EC68P/EC78P: UK)	
M601	1-787-631-11	FAN, DC (EC78P: US, CND)	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#2	7-685-661-14	SCREW +BVTP 4X12 TYPE2 N-S	

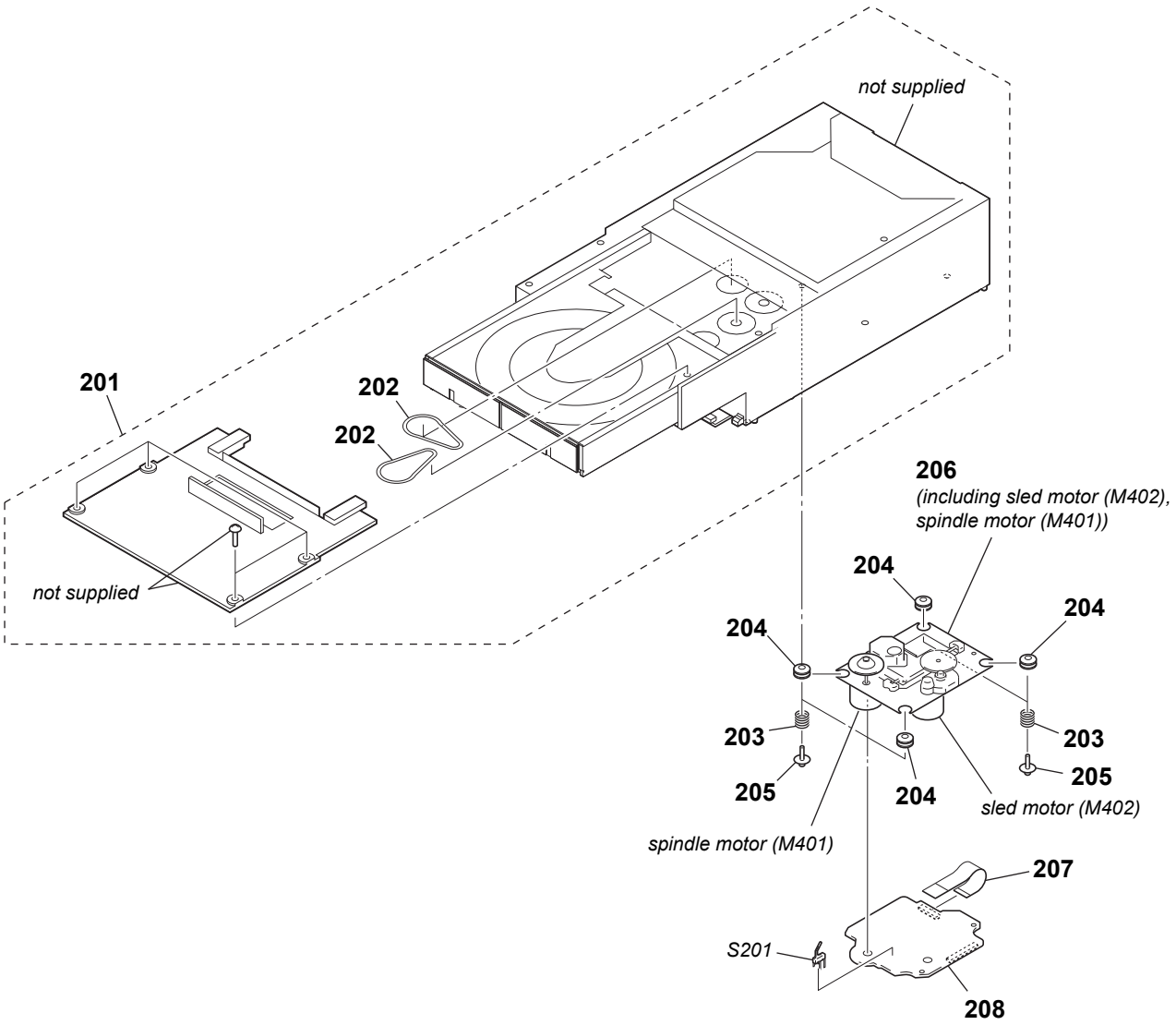
7-4. MAIN SECTION



Ref. No.	Part No.	Description	Remark
151	A-1379-655-A	MAIN BOARD, COMPLETE (EC78P: US, CND)	
151	A-1379-713-A	MAIN BOARD, COMPLETE (EC68P: US)	
151	A-1426-105-A	MAIN BOARD, COMPLETE (EC78P: UK)	
151	A-1426-163-A	MAIN BOARD, COMPLETE (EC68P: AUS)	
152	1-831-744-21	CABLE, FLEXIBLE FLAT (5 CORE)	
153	1-835-276-21	CABLE, FLEXIBLE FLAT (5 CORE) (EC78P)	
154	3-905-609-31	SCREW (TRANSISTOR)	

Ref. No.	Part No.	Description	Remark
⚠ PT003	1-445-346-11	TRANSFORMER, POWER (EC68P: AUS)	
⚠ PT003	1-445-476-11	TRANSFORMER, POWER (EC68P: US)	
⚠ PT004	1-445-343-11	TRANSFORMER, POWER (EC78P: UK)	
⚠ PT004	1-445-345-11	TRANSFORMER, POWER (EC78P: US, CND)	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#3	7-685-880-09	SCREW +BVTT 4X6 (S)	
#4	7-685-645-79	SCREW +BVTP 3X6 TYPE2 IT-3	

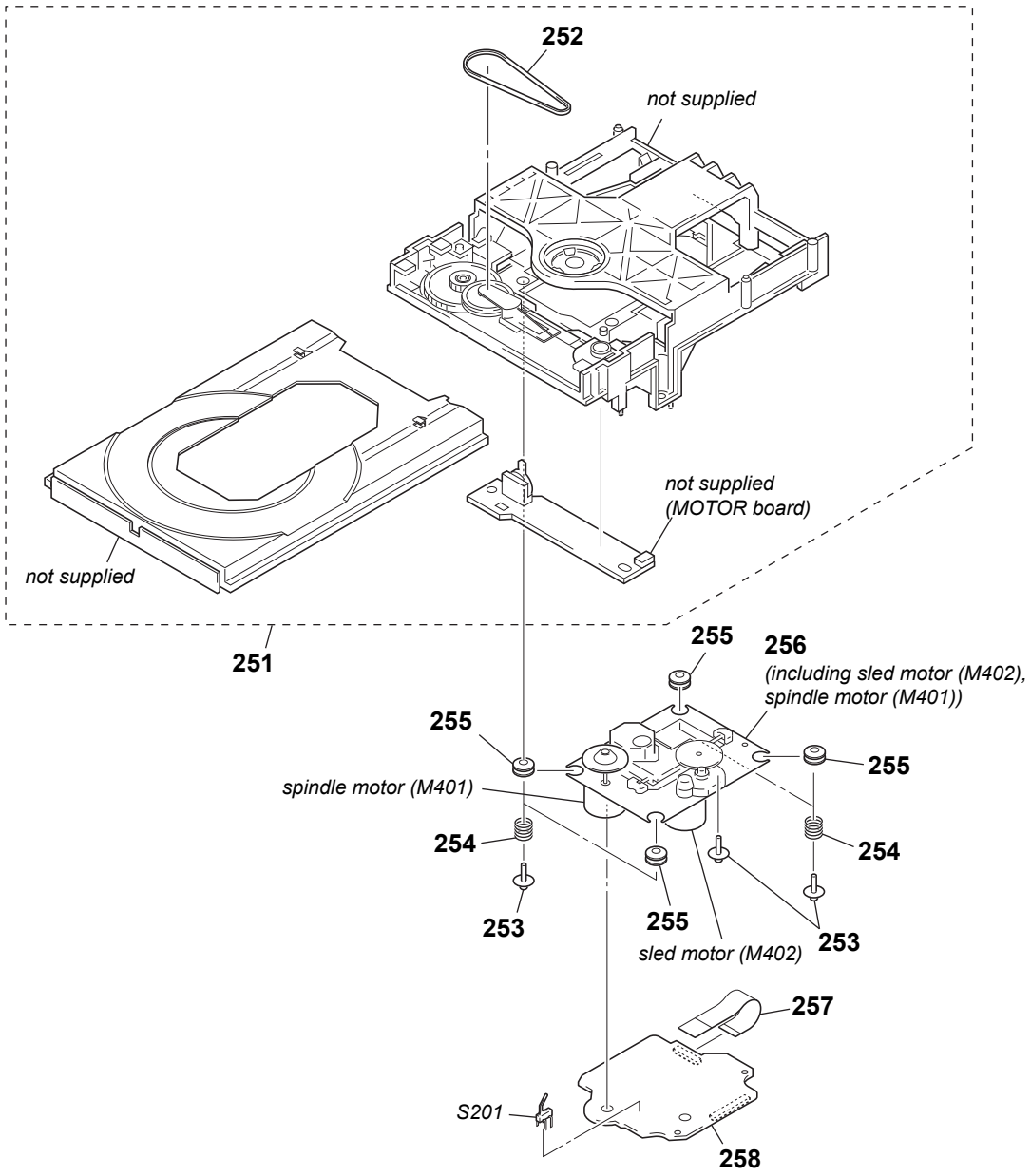
7-5. 3 CD MECHANISM SECTION (EC78P: UK) (CDM88A-K6BD90-WOD)



Ref. No.	Part No.	Description	Remark
201	1-797-193-12	MECHANICAL, CD (DLM3A)	
202	2-632-062-11	BELT (DLM3A)	
203	4-227-045-31	SPRING (INSULATOR), COIL	
204	4-227-549-31	INSULATOR	
205	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	

Ref. No.	Part No.	Description	Remark
⚠ 206	A-4735-357-A	BASE ASSY, OP (KSM-213D)	
207	1-832-404-21	CABLE, FLEXIBLE FLAT (16 CORE)	
208	A-1217-914-A	CD BOARD, COMPLETE	
S201	1-771-853-11	SWITCH, DETECTION (LIMIT)	

7-6. 1 CD MECHANISM SECTION (EXCEPT EC78P: UK) (CDM77B-K6BD90-WOD)



Ref. No.	Part No.	Description	Remark
251	A-1242-967-A	LOADING (BK) ASSY	
252	3-080-478-01	BELT	
253	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
254	4-227-045-41	SPRING (INSULATOR)	
255	4-229-005-41	INSULATOR	
⚠ 256	A-4735-357-A	BASE ASSY, OP (KSM-213D)	
257	1-832-404-21	CABLE, FLEXIBLE FLAT (16 CORE)	
258	A-1217-914-A	CD BOARD, COMPLETE	
S201	1-771-853-11	SWITCH, DETECTION (LIMIT)	

SECTION 8
ELECTRICAL PARTS LIST

CD

Note:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . , uPA. . , µPA. . ,
  uPB. . : µPB. . , uPC. . , µPC. . ,
  uPD. . : µPD. .
- Abbreviation
  AUS : Australian model
  CND : Canadian model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
	A-1217-914-A	CD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C100	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C101	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C102	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C103	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C104	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C105	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C106	1-128-995-21	ELECT CHIP	100uF	20%	10V
C107	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C108	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C109	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C110	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C112	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C113	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C115	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C116	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C117	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C119	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C120	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C122	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C123	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C124	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C125	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C126	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C127	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C128	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C130	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C132	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C133	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C136	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C137	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C138	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C139	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C140	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C141	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C142	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C143	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C144	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C145	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C146	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C147	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C148	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C149	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C150	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C151	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C152	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C153	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C201	1-128-995-21	ELECT CHIP	100uF	20%	10V
C202	1-128-995-21	ELECT CHIP	100uF	20%	10V
C204	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C206	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C207	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C301	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C302	1-137-710-91	CERAMIC CHIP	10uF	20%	6.3V
C303	1-137-710-91	CERAMIC CHIP	10uF	20%	6.3V
C306	1-128-995-21	ELECT CHIP	100uF	20%	10V
C307	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C309	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C401	1-128-394-11	ELECT CHIP	220uF	20%	10V
C403	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C404	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C405	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN201	1-784-833-51	CONNECTOR, FFC (LIF (NON-ZIF)) 21P			
CN301	1-770-425-51	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	6-712-622-01	IC TC94A70FG-006 (D, HZ			
IC201	6-710-808-01	IC TK63115SCL-G@GT			
IC401	6-710-637-01	IC BA5826SFP-E2			
		< TRANSISTOR >			
Q301	6-551-120-01	TRANSISTOR	2SA2119K		
		< RESISTOR >			
R101	1-216-813-11	METAL CHIP	220	5%	1/10W
R102	1-216-833-11	METAL CHIP	10K	5%	1/10W
R104	1-216-295-91	SHORT CHIP	0		
R105	1-216-857-11	METAL CHIP	1M	5%	1/10W
R106	1-216-821-11	METAL CHIP	1K	5%	1/10W
R108	1-216-864-11	SHORT CHIP	0		
R110	1-216-833-11	METAL CHIP	10K	5%	1/10W
R111	1-216-809-11	METAL CHIP	100	5%	1/10W
R112	1-216-809-11	METAL CHIP	100	5%	1/10W

CD DMP HI AMP

Ref. No.	Part No.	Description			Remark
R113	1-216-833-11	METAL CHIP	10K	5%	1/10W
R114	1-216-833-11	METAL CHIP	10K	5%	1/10W
R118	1-216-845-11	METAL CHIP	100K	5%	1/10W
R120	1-216-864-11	SHORT CHIP	0		
R125	1-216-864-11	SHORT CHIP	0		
R126	1-216-864-11	SHORT CHIP	0		
R127	1-216-864-11	SHORT CHIP	0		
R128	1-216-853-11	METAL CHIP	470K	5%	1/10W
R129	1-216-821-11	METAL CHIP	1K	5%	1/10W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R134	1-216-857-11	METAL CHIP	1M	5%	1/10W
R135	1-216-853-11	METAL CHIP	470K	5%	1/10W
R136	1-216-837-11	METAL CHIP	22K	5%	1/10W
R139	1-216-841-11	METAL CHIP	47K	5%	1/10W
R140	1-216-864-11	SHORT CHIP	0		
R142	1-216-837-11	METAL CHIP	22K	5%	1/10W
R143	1-216-841-11	METAL CHIP	47K	5%	1/10W
R144	1-216-837-11	METAL CHIP	22K	5%	1/10W
R145	1-216-864-11	SHORT CHIP	0		
R146	1-216-864-11	SHORT CHIP	0		
R147	1-216-864-11	SHORT CHIP	0		
R148	1-216-864-11	SHORT CHIP	0		
R149	1-216-864-11	SHORT CHIP	0		
R150	1-216-864-11	SHORT CHIP	0		
R151	1-216-864-11	SHORT CHIP	0		
R153	1-216-857-11	METAL CHIP	1M	5%	1/10W
R154	1-216-857-11	METAL CHIP	1M	5%	1/10W
R155	1-216-805-11	METAL CHIP	47	5%	1/10W
R156	1-216-809-11	METAL CHIP	100	5%	1/10W
R157	1-216-809-11	METAL CHIP	100	5%	1/10W
R201	1-216-295-91	SHORT CHIP	0		
R202	1-216-295-91	SHORT CHIP	0		
R203	1-216-809-11	METAL CHIP	100	5%	1/10W
R204	1-216-809-11	METAL CHIP	100	5%	1/10W
R205	1-216-809-11	METAL CHIP	100	5%	1/10W
R206	1-216-809-11	METAL CHIP	100	5%	1/10W
R207	1-216-809-11	METAL CHIP	100	5%	1/10W
R208	1-216-809-11	METAL CHIP	100	5%	1/10W
R209	1-216-809-11	METAL CHIP	100	5%	1/10W
R210	1-216-809-11	METAL CHIP	100	5%	1/10W
R211	1-216-809-11	METAL CHIP	100	5%	1/10W
R212	1-216-809-11	METAL CHIP	100	5%	1/10W
R218	1-216-845-11	METAL CHIP	100K	5%	1/10W
R219	1-216-845-11	METAL CHIP	100K	5%	1/10W
R220	1-216-845-11	METAL CHIP	100K	5%	1/10W
R221	1-216-845-11	METAL CHIP	100K	5%	1/10W
R222	1-216-845-11	METAL CHIP	100K	5%	1/10W
R223	1-216-845-11	METAL CHIP	100K	5%	1/10W
R301	1-216-845-11	METAL CHIP	100K	5%	1/10W
R302	1-216-864-11	SHORT CHIP	0		
R303	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R304	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R402	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R405	1-216-833-11	METAL CHIP	10K	5%	1/10W
R408	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R414	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R415	1-216-841-11	METAL CHIP	47K	5%	1/10W

Ref. No.	Part No.	Description			Remark
		< VIBRATOR >			
X102	1-795-101-21	VIBRATOR, CERAMIC (16.9344MHz)			
**********					
	A-1379-815-A	DMP BOARD, COMPLETE			
		**********			
	3-276-209-01	BRACKET (DMPORT)			
		< CONNECTOR >			
CN901	1-817-615-21	CONNECTOR, SQUARE TYPE (RECE) (DMPORT)			
CN902	1-784-863-51	CONNECTOR, FFC (LIF (NON-ZIF)) 11P			
		< JUMPER RESISTOR >			
R904	1-216-864-11	SHORT CHIP	0		
R905	1-216-864-11	SHORT CHIP	0		
R906	1-216-864-11	SHORT CHIP	0		
R907	1-216-864-11	SHORT CHIP	0		
R908	1-216-864-11	SHORT CHIP	0		
**********					
		HI AMP BOARD (EC78P)			
		**********			
		< CAPACITOR >			
C151	1-126-960-11	ELECT	1uF	20%	50V
C152	1-126-960-11	ELECT	1uF	20%	50V
C153	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C154	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C155	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C156	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C157	1-126-960-11	ELECT	1uF	20%	50V
C158	1-126-960-11	ELECT	1uF	20%	50V
C159	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C160	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C166	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C169	1-128-576-11	ELECT	100uF	20%	63V
C170	1-128-576-11	ELECT	100uF	20%	63V
C173	1-165-621-91	CERAMIC CHIP	0.1uF		50V
C174	1-165-621-91	CERAMIC CHIP	0.1uF		50V
C175	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C176	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C178	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN151	1-819-134-11	PIN, CONNECTOR 6P			
CN152	1-784-766-11	CONNECTOR, FFC 5P			
		< DIODE >			
D151	6-500-335-01	DIODE MC2838-T112-1			
D152	6-501-817-01	DIODE MA2J1110GLS0			
		< IC >			
IC151	6-705-621-01	IC STK433-070 (EC78P: UK)			
IC152	6-600-580-01	IC STK433-090-E (EC78P: US, CND)			
		< JUMPER RESISTOR >			
JR151	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description				Remark
		< TRANSISTOR >				
Q151	6-551-270-01	TRANSISTOR	2SA2026			
Q152	6-551-270-01	TRANSISTOR	2SA2026			
		< RESISTOR >				
R151	1-216-813-11	METAL CHIP	220	5%	1/10W	(EC78P: US, CND)
R151	1-216-824-11	METAL CHIP	1.8K	5%	1/10W	(EC78P: UK)
R152	1-216-813-11	METAL CHIP	220	5%	1/10W	(EC78P: US, CND)
R152	1-216-824-11	METAL CHIP	1.8K	5%	1/10W	(EC78P: UK)
R153	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R154	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R155	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R156	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R159	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R160	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R161	1-216-817-11	METAL CHIP	470	5%	1/10W	
R162	1-216-817-11	METAL CHIP	470	5%	1/10W	
R163	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R164	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R171	1-216-864-11	SHORT CHIP	0			
R172	1-216-809-11	METAL CHIP	100	5%	1/10W	
R173	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R175	1-216-813-11	METAL CHIP	220	5%	1/10W	
R176	1-216-813-11	METAL CHIP	220	5%	1/10W	
R177	1-216-813-11	METAL CHIP	220	5%	1/10W	
R178	1-216-813-11	METAL CHIP	220	5%	1/10W	
⚠ R179	1-216-361-31	METAL OXIDE	0.22	5%	2W	F
⚠ R180	1-216-361-31	METAL OXIDE	0.22	5%	2W	F
R181	1-216-822-11	METAL CHIP	1.2K	5%	1/10W	
R182	1-216-822-11	METAL CHIP	1.2K	5%	1/10W	
R183	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R184	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R185	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R186	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R195	1-216-817-11	METAL CHIP	470	5%	1/10W	
R196	1-216-817-11	METAL CHIP	470	5%	1/10W	
**********						
		JACK BOARD				
		**********				
		< CAPACITOR >				
C491	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C495	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C496	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
		< JACK >				
J491	1-566-822-51	JACK (AUDIO IN)				
J492	1-815-629-21	JACK (PHONES)				
		< RESISTOR >				
R491	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R492	1-216-837-11	METAL CHIP	22K	5%	1/10W	
**********						

Ref. No.	Part No.	Description				Remark
		KEY CD BOARD				
		**********				
		< RESISTOR >				
R407	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R408	1-216-826-11	METAL CHIP	2.7K	5%	1/10W	
R409	1-216-828-11	METAL CHIP	3.9K	5%	1/10W	
R410	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	(EC78P: UK)
R411	1-216-835-11	METAL CHIP	15K	5%	1/10W	(EC78P: UK)
		< SWITCH >				
SW306	1-771-410-21	SWITCH, TACTILE (CD) (EC68P/EC78P: US, CND)				
SW306	1-771-410-21	SWITCH, TACTILE (DISC 1) (EC78P: UK)				
SW307	1-771-410-21	SWITCH, TACTILE (DMPORT)				(EC68P/EC78P: US, CND)
SW307	1-771-410-21	SWITCH, TACTILE (DISC 2) (EC78P: UK)				
SW308	1-771-410-21	SWITCH, TACTILE (⏏) (EC68P/EC78P: US, CND)				
SW308	1-771-410-21	SWITCH, TACTILE (DISC 3) (EC78P: UK)				
SW309	1-771-410-21	SWITCH, TACTILE (⏏) (EC78P: UK)				
SW310	1-771-410-21	SWITCH, TACTILE (DISC SKIP/EX-CHANGE)				(EC78P: UK)
**********						
		KEY POWER BOARD				
		**********				
		< SWITCH >				
SW301	1-771-410-21	SWITCH, TACTILE (I/⏻, STANDBY)				
		< CABLE HOLDER >				
W401	1-824-027-21	HOLDER, CABLE 3P				
**********						
		LOW AMP BOARD				
		**********				
		< CAPACITOR >				
C101	1-126-960-11	ELECT	1uF	20%	50V	
C102	1-126-960-11	ELECT	1uF	20%	50V	
C103	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C104	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C105	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C106	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C107	1-126-947-11	ELECT	47uF	20%	35V	
C108	1-126-947-11	ELECT	47uF	20%	35V	
C109	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V	
C110	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V	
C116	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C119	1-126-968-11	ELECT	100uF	20%	50V	(EC68P)
C119	1-128-576-11	ELECT	100uF	20%	63V	(EC78P)
C120	1-126-968-11	ELECT	100uF	20%	50V	(EC68P)
C120	1-128-576-11	ELECT	100uF	20%	63V	(EC78P)
C123	1-165-621-91	CERAMIC CHIP	0.1uF		50V	
C124	1-165-621-91	CERAMIC CHIP	0.1uF		50V	
C125	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V	
C126	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V	
C128	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V	

LOW AMP **MAIN**

Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
CN102	1-784-766-11	CONNECTOR, FFC 5P			
CN104	1-824-030-21	HOLDER, CABLE 5P			
		< DIODE >			
D101	6-500-335-01	DIODE MC2838-T112-1			
D103	6-501-817-01	DIODE MA2J1110GLS0			
		< IC >			
IC101	6-705-620-01	IC STK433-060 (EC68P)			
IC101	6-705-621-01	IC STK433-070 (EC78P: UK)			
IC102	6-600-580-01	IC STK433-090-E (EC78P: US, CND)			
		< JUMPER RESISTOR >			
JR132	1-216-864-11	SHORT CHIP	0		
		< TRANSISTOR >			
Q101	6-551-270-01	TRANSISTOR	2SA2026		
Q102	6-551-270-01	TRANSISTOR	2SA2026		
		< RESISTOR >			
R101	1-216-864-11	SHORT CHIP	0		
R102	1-216-864-11	SHORT CHIP	0		
R103	1-216-813-11	METAL CHIP	220	5%	1/10W (EC78P: US, CND)
R103	1-216-824-11	METAL CHIP	1.8K	5%	1/10W (EC78P: UK)
R103	1-216-827-11	METAL CHIP	3.3K	5%	1/10W (EC68P)
R104	1-216-813-11	METAL CHIP	220	5%	1/10W (EC78P: US, CND)
R104	1-216-824-11	METAL CHIP	1.8K	5%	1/10W (EC78P: UK)
R104	1-216-827-11	METAL CHIP	3.3K	5%	1/10W (EC68P)
R105	1-216-829-11	METAL CHIP	4.7K	5%	1/10W (EC68P)
R105	1-216-837-11	METAL CHIP	22K	5%	1/10W (EC78P)
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/10W (EC68P)
R106	1-216-837-11	METAL CHIP	22K	5%	1/10W (EC78P)
R107	1-216-841-11	METAL CHIP	47K	5%	1/10W
R108	1-216-841-11	METAL CHIP	47K	5%	1/10W
R109	1-216-821-11	METAL CHIP	1K	5%	1/10W
R110	1-216-821-11	METAL CHIP	1K	5%	1/10W
R111	1-216-817-11	METAL CHIP	470	5%	1/10W
R112	1-216-817-11	METAL CHIP	470	5%	1/10W
R113	1-216-841-11	METAL CHIP	47K	5%	1/10W
R114	1-216-841-11	METAL CHIP	47K	5%	1/10W
R122	1-216-809-11	METAL CHIP	100	5%	1/10W
R123	1-216-821-11	METAL CHIP	1K	5%	1/10W
R125	1-216-813-11	METAL CHIP	220	5%	1/10W
R126	1-216-813-11	METAL CHIP	220	5%	1/10W
R127	1-216-813-11	METAL CHIP	220	5%	1/10W
R128	1-216-813-11	METAL CHIP	220	5%	1/10W
⚠ R129	1-216-361-31	METAL OXIDE	0.22	5%	2W F
⚠ R130	1-216-361-31	METAL OXIDE	0.22	5%	2W F
R131	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R132	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R133	1-216-837-11	METAL CHIP	22K	5%	1/10W
R134	1-216-837-11	METAL CHIP	22K	5%	1/10W
R135	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R136	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R142	1-216-864-11	SHORT CHIP	0		
R145	1-216-817-11	METAL CHIP	470	5%	1/10W
R146	1-216-817-11	METAL CHIP	470	5%	1/10W
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	A-1379-655-A	MAIN BOARD, COMPLETE (EC78P: US, CND)			
	A-1379-713-A	MAIN BOARD, COMPLETE (EC68P: US)			
	A-1426-105-A	MAIN BOARD, COMPLETE (EC78P: UK)			
	A-1426-163-A	MAIN BOARD, COMPLETE (EC68P: AUS)			
		**********			
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S			
		< CAPACITOR >			
C601	1-126-947-11	ELECT	47uF	20%	35V
C602	1-104-662-91	ELECT	22uF	20%	25V
C603	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (EC78P)
C604	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V (EC78P)
C605	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V (EC78P)
C606	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (EC78P)
C607	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C608	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C609	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C610	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C611	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C612	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C613	1-126-964-11	ELECT	10uF	20%	50V
C614	1-126-963-11	ELECT	4.7uF	20%	50V
C615	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V (EC78P)
C616	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V (EC78P)
C617	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C618	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C620	1-104-658-91	ELECT	100uF	20%	10V
C621	1-137-749-11	MYLAR	0.1uF		100V
C622	1-114-471-51	ELECT	3300uF	20%	63V (EC78P: US, CND)
C622	1-126-974-11	ELECT	3300uF	20%	50V (EC78P: UK)
C622	1-128-550-11	ELECT	2200uF	20%	50V (EC68P)
C623	1-137-749-11	MYLAR	0.1uF		100V
C626	1-114-471-51	ELECT	3300uF	20%	63V (EC78P: US, CND)
C626	1-126-974-11	ELECT	3300uF	20%	50V (EC78P: UK)
C626	1-128-550-11	ELECT	2200uF	20%	50V (EC68P)
C627	1-126-943-11	ELECT	2200uF	20%	25V
C628	1-126-942-61	ELECT	1000uF	20%	25V
C629	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C630	1-126-947-11	ELECT	47uF	20%	35V

Ref. No.	Part No.	Description			Remark
C631	1-126-933-11	ELECT	100uF	20%	16V
C632	1-126-963-11	ELECT	4.7uF	20%	50V
C633	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C634	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C636	1-126-960-11	ELECT	1uF	20%	50V
C637	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C638	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C639	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C640	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C641	1-126-962-11	ELECT	3.3uF	20%	50V
C642	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C644	1-126-960-11	ELECT	1uF	20%	50V
C645	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C646	1-126-960-11	ELECT	1uF	20%	50V
C647	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C648	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C649	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C650	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C652	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C654	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C655	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C656	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C657	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C658	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C659	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C660	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C661	1-126-964-11	ELECT	10uF	20%	50V
C662	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C663	1-126-960-11	ELECT	1uF	20%	50V
C664	1-126-960-11	ELECT	1uF	20%	50V
C665	1-126-960-11	ELECT	1uF	20%	50V
C666	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C667	1-126-933-11	ELECT	100uF	20%	16V
C669	1-126-923-91	ELECT	220uF	20%	10V
C671	1-126-933-11	ELECT	100uF	20%	16V
C673	1-126-925-91	ELECT	470uF	20%	10V
C674	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C675	1-126-960-11	ELECT	1uF	20%	50V
C676	1-126-960-11	ELECT	1uF	20%	50V
C679	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C680	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C681	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C682	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C683	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C684	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C685	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C686	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C687	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C689	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C690	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C691	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C692	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C693	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C694	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C695	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C696	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C699	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C700	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C703	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C704	1-162-962-11	CERAMIC CHIP	470PF	10%	50V

Ref. No.	Part No.	Description			Remark
C713	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C714	1-126-947-11	ELECT	47uF	20%	35V
C760	1-104-665-11	ELECT	100uF	20%	25V
C761	1-126-935-11	ELECT	470uF	20%	16V
C762	1-104-658-91	ELECT	100uF	20%	10V
C771	1-126-960-11	ELECT	1uF	20%	50V
C772	1-126-960-11	ELECT	1uF	20%	50V
C773	1-126-960-11	ELECT	1uF	20%	50V
C774	1-126-960-11	ELECT	1uF	20%	50V
C775	1-126-947-11	ELECT	47uF	20%	35V
C776	1-104-662-91	ELECT	22uF	20%	25V
C786	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C787	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C788	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C789	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C791	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C802	1-126-933-11	ELECT	100uF	20%	16V
C803	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C804	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C805	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C806	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C807	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C808	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C809	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C810	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C811	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C814	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (EC68P: AUS/EC78P: UK)
C814	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EC68P: US/EC78P: US, CND)
C815	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (EC68P: AUS/EC78P: UK)
C815	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EC68P: US/EC78P: US, CND)
C816	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C817	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C819	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C820	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C821	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C822	1-126-965-91	ELECT	22uF	20%	50V
C823	1-126-923-91	ELECT	220uF	20%	10V
C824	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C826	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C827	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C828	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C829	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C830	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C831	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C832	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C833	1-126-923-91	ELECT	220uF	20%	10V
C834	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C835	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C836	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C837	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C838	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C840	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C841	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C843	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C844	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C845	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C846	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

MAIN

Ref. No.	Part No.	Description	Remark
C847	1-100-566-91	CERAMIC CHIP 0.1uF 10%	25V
C848	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C850	1-164-156-11	CERAMIC CHIP 0.1uF	25V
		< FILTER >	
CF801	1-781-962-21	FILTER, CERAMIC	
		< CONNECTOR >	
CN601	1-819-131-11	PIN, CONNECTOR 3P	
CN602	1-784-766-11	CONNECTOR, FFC 5P (EC78P)	
CN603	1-784-766-11	CONNECTOR, FFC 5P	
CN604	1-819-136-11	PIN, CONNECTOR 8P	
CN605	1-784-770-11	CONNECTOR, FFC 9P	
CN608	1-779-289-11	CONNECTOR, FFC (LIF (NON-ZIF)) 21P	
CN609	1-779-279-11	CONNECTOR, FFC (LIF (NON-ZIF)) 11P	
CN632	1-824-030-21	HOLDER, CABLE 5P (EC78P)	
CN633	1-819-133-11	PIN, CONNECTOR	
* CN801	1-506-680-11	PLUG, CONNECTOR (2.5mm) 3P	(ANTENNA FM/AM)
CN803	1-784-792-11	CONNECTOR, FFC 31P	
		< DIODE >	
D601	6-500-335-01	DIODE MC2838-T112-1	
D602	6-500-335-01	DIODE MC2838-T112-1	
D603	6-501-817-01	DIODE MA2J1110GLS0 (EC78P)	
D604	6-501-817-01	DIODE MA2J1110GLS0	
D605	6-501-817-01	DIODE MA2J1110GLS0	
D606	6-500-334-01	DIODE MC2836-T112-1	
D607	6-501-046-01	DIODE 1N5402-F46	
D608	6-501-046-01	DIODE 1N5402-F46	
D609	6-501-046-01	DIODE 1N5402-F46	
D610	6-501-046-01	DIODE 1N5402-F46	
D611	8-719-046-07	DIODE 2A02M (EC78P)	
D612	8-719-046-07	DIODE 2A02M (EC78P)	
D614	6-501-817-01	DIODE MA2J1110GLS0	
D615	8-719-063-79	DIODE 1N4002B	
D617	6-500-335-01	DIODE MC2838-T112-1	
D618	6-501-719-01	DIODE MAZ8039GHLS0	
D619	8-719-063-79	DIODE 1N4002B	
D620	8-719-063-79	DIODE 1N4002B	
D621	6-501-722-01	DIODE MAZ8043GMLS0	
D622	6-501-752-01	DIODE MAZ8082GMLS0	
D628	6-501-817-01	DIODE MA2J1110GLS0	
D629	8-719-063-79	DIODE 1N4002B (EC68P)	
D630	8-719-063-79	DIODE 1N4002B (EC68P)	
D631	6-501-817-01	DIODE MA2J1110GLS0	
D701	8-719-079-47	DIODE RK36LF-A4	
D791	6-501-817-01	DIODE MA2J1110GLS0	
D801	6-501-142-01	DIODE SVC347A-TL-E	
D802	8-719-062-51	DIODE 1PS226-115	
D803	6-501-369-01	DIODE SVC230-TB-E	
D804	6-501-369-01	DIODE SVC230-TB-E	
D805	8-719-062-51	DIODE 1PS226-115	
D806	8-719-062-51	DIODE 1PS226-115	
		< GROUND TERMINAL >	
ET601	1-537-771-21	TERMINAL BOARD, GROUND	
ET602	1-537-771-21	TERMINAL BOARD, GROUND	

Ref. No.	Part No.	Description	Remark
		< FILTER >	
FL801	1-760-393-11	FILTER, CERAMIC	
FL803	1-236-711-21	FILTER, BAND PASS	
		< IC >	
IC602	6-712-055-01	IC BD3499FV-E2	
IC701	6-712-088-01	IC BD9701CP-V5	
IC770	8-759-278-58	IC NJM4558V-TE2	
IC801	6-708-840-01	IC LV23003VA	
		< JUMPER RESISTOR >	
JR601	1-216-864-11	SHORT CHIP 0	
JR602	1-216-864-11	SHORT CHIP 0	
JR603	1-216-864-11	SHORT CHIP 0	
JR604	1-216-864-11	SHORT CHIP 0	
JR605	1-216-864-11	SHORT CHIP 0	
JR606	1-216-864-11	SHORT CHIP 0	
JR607	1-216-864-11	SHORT CHIP 0	
JR608	1-216-864-11	SHORT CHIP 0	
JR609	1-216-864-11	SHORT CHIP 0	
JR610	1-216-864-11	SHORT CHIP 0	
JR611	1-216-864-11	SHORT CHIP 0	
JR612	1-216-864-11	SHORT CHIP 0	
JR613	1-216-864-11	SHORT CHIP 0	
JR614	1-216-864-11	SHORT CHIP 0	
JR615	1-216-864-11	SHORT CHIP 0	
JR616	1-216-864-11	SHORT CHIP 0	
JR617	1-216-864-11	SHORT CHIP 0	
JR618	1-216-864-11	SHORT CHIP 0	
		< COIL >	
L601	1-456-107-11	COIL, AIR-CORE (EC78P)	
L602	1-456-107-11	COIL, AIR-CORE (EC78P)	
L603	1-456-107-11	COIL, AIR-CORE	
L604	1-456-107-11	COIL, AIR-CORE	
L701	1-456-467-11	INDUCTOR 100uH	
L801	1-456-596-11	COIL, MW OSC	
L802	1-457-168-11	COIL, DET	
L803	1-457-162-11	COIL, AIR-CORE	
L804	1-457-163-11	COIL, AIR-CORE	
L805	1-457-161-11	COIL, AM ANTENNA	
		< TRANSISTOR >	
Q601	8-729-037-03	TRANSISTOR KTA1266GR-AT	
Q602	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q603	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q604	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q605	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q606	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q608	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q611	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q612	6-551-696-01	TRANSISTOR ISA1235AC1TP-1EF	
Q618	6-551-696-01	TRANSISTOR ISA1235AC1TP-1EF	
Q619	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q622	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q624	8-729-036-86	TRANSISTOR KTC3203Y-AT	
Q761	6-551-696-01	TRANSISTOR ISA1235AC1TP-1EF	
Q762	8-729-027-43	TRANSISTOR DTC114EKA-T146	
Q801	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q802	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R601	1-216-817-11	METAL CHIP	470	5%	1/10W
R603	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R604	1-216-845-11	METAL CHIP	100K	5%	1/10W
R605	1-216-799-11	METAL CHIP	15	5%	1/10W (EC78P: US, CND)
R605	1-216-806-11	METAL CHIP	56	5%	1/10W (EC68P/EC78P: UK)
R606	1-216-797-11	METAL CHIP	10	5%	1/10W (EC78P)
R607	1-216-797-11	METAL CHIP	10	5%	1/10W (EC78P)
R608	1-216-797-11	METAL CHIP	10	5%	1/10W (EC78P)
R609	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R610	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R611	1-216-797-11	METAL CHIP	10	5%	1/10W
R612	1-216-797-11	METAL CHIP	10	5%	1/10W
R613	1-216-833-11	METAL CHIP	10K	5%	1/10W
R614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R615	1-216-797-11	METAL CHIP	10	5%	1/10W
R616	1-216-828-11	METAL CHIP	3.9K	5%	1/10W (EC68P)
R616	1-216-833-11	METAL CHIP	10K	5%	1/10W (EC78P: UK)
R616	1-216-835-11	METAL CHIP	15K	5%	1/10W (EC78P: US, CND)
R617	1-216-833-11	METAL CHIP	10K	5%	1/10W
R618	1-216-833-11	METAL CHIP	10K	5%	1/10W
R619	1-216-828-11	METAL CHIP	3.9K	5%	1/10W (EC68P)
R619	1-216-833-11	METAL CHIP	10K	5%	1/10W (EC78P: UK)
R619	1-216-835-11	METAL CHIP	15K	5%	1/10W (EC78P: US, CND)
R620	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R621	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R622	1-216-839-11	METAL CHIP	33K	5%	1/10W
R623	1-216-833-11	METAL CHIP	10K	5%	1/10W
R624	1-216-833-11	METAL CHIP	10K	5%	1/10W
R625	1-216-839-11	METAL CHIP	33K	5%	1/10W
R626	1-216-833-11	METAL CHIP	10K	5%	1/10W
R627	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R628	1-216-833-11	METAL CHIP	10K	5%	1/10W
R629	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R630	1-216-841-11	METAL CHIP	47K	5%	1/10W
R631	1-216-797-11	METAL CHIP	10	5%	1/10W (EC78P)
R632	1-216-845-11	METAL CHIP	100K	5%	1/10W (EC78P)
R633	1-216-845-11	METAL CHIP	100K	5%	1/10W (EC78P)
R634	1-249-402-11	CARBON	56	5%	1/4W (EC78P)
R635	1-249-402-11	CARBON	56	5%	1/4W (EC78P)
R636	1-249-402-11	CARBON	56	5%	1/4W (EC78P)
R637	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R638	1-249-403-11	CARBON	68	5%	1/4W
R639	1-216-845-11	METAL CHIP	100K	5%	1/10W
R640	1-216-845-11	METAL CHIP	100K	5%	1/10W
R641	1-249-403-11	CARBON	68	5%	1/4W
R642	1-249-403-11	CARBON	68	5%	1/4W
R643	1-216-833-11	METAL CHIP	10K	5%	1/10W
R644	1-216-821-11	METAL CHIP	1K	5%	1/10W
R645	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R646	1-216-809-11	METAL CHIP	100	5%	1/10W
R647	1-216-797-11	METAL CHIP	10	5%	1/10W
R648	1-216-841-11	METAL CHIP	47K	5%	1/10W
R649	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R650	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R651	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R652	1-216-809-11	METAL CHIP	100	5%	1/10W
⚠ R658	1-215-890-51	METAL OXIDE	470	5%	2W F
R660	1-216-864-11	SHORT CHIP	0		
⚠ R662	1-215-890-51	METAL OXIDE	470	5%	2W F
R663	1-216-821-11	METAL CHIP	1K	5%	1/10W
R666	1-216-821-11	METAL CHIP	1K	5%	1/10W
R667	1-216-841-11	METAL CHIP	47K	5%	1/10W
R669	1-216-845-11	METAL CHIP	100K	5%	1/10W
R670	1-216-833-11	METAL CHIP	10K	5%	1/10W
R672	1-216-833-11	METAL CHIP	10K	5%	1/10W
R673	1-216-864-11	SHORT CHIP	0		
R674	1-249-401-11	CARBON	47	5%	1/4W
R675	1-249-401-11	CARBON	47	5%	1/4W
R676	1-216-833-11	METAL CHIP	10K	5%	1/10W
R677	1-216-833-11	METAL CHIP	10K	5%	1/10W
R678	1-216-841-11	METAL CHIP	47K	5%	1/10W
R681	1-216-837-11	METAL CHIP	22K	5%	1/10W
R684	1-216-837-11	METAL CHIP	22K	5%	1/10W
R685	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R686	1-216-842-11	METAL CHIP	56K	5%	1/10W
R687	1-216-837-11	METAL CHIP	22K	5%	1/10W
R689	1-216-838-11	METAL CHIP	27K	5%	1/10W
R690	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R691	1-216-833-11	METAL CHIP	10K	5%	1/10W
R692	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R693	1-216-821-11	METAL CHIP	1K	5%	1/10W
R696	1-216-833-11	METAL CHIP	10K	5%	1/10W
R697	1-216-821-11	METAL CHIP	1K	5%	1/10W
R700	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R701	1-216-833-11	METAL CHIP	10K	5%	1/10W
R702	1-216-833-11	METAL CHIP	10K	5%	1/10W
R704	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R706	1-216-813-11	METAL CHIP	220	5%	1/10W
R707	1-216-813-11	METAL CHIP	220	5%	1/10W
R708	1-216-833-11	METAL CHIP	10K	5%	1/10W
R709	1-216-821-11	METAL CHIP	1K	5%	1/10W
R715	1-216-809-11	METAL CHIP	100	5%	1/10W
R716	1-216-821-11	METAL CHIP	1K	5%	1/10W
R717	1-249-403-11	CARBON	68	5%	1/4W
R718	1-249-403-11	CARBON	68	5%	1/4W
R719	1-249-403-11	CARBON	68	5%	1/4W
R720	1-216-837-11	METAL CHIP	22K	5%	1/10W
R722	1-216-809-11	METAL CHIP	100	5%	1/10W
R724	1-249-395-11	CARBON	15	5%	1/4W
R725	1-249-395-11	CARBON	15	5%	1/4W
R726	1-249-395-11	CARBON	15	5%	1/4W
R727	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R728	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R729	1-216-845-11	METAL CHIP	100K	5%	1/10W

MAIN **MOTOR** **PANEL**

Ref. No.	Part No.	Description			Remark
R731	1-216-809-11	METAL CHIP	100	5%	1/10W
R732	1-216-809-11	METAL CHIP	100	5%	1/10W
R741	1-216-821-11	METAL CHIP	1K	5%	1/10W
R742	1-216-821-11	METAL CHIP	1K	5%	1/10W
R749	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R750	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R751	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R752	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R753	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R754	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R759	1-216-805-11	METAL CHIP	47	5%	1/10W
R761	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R762	1-216-839-11	METAL CHIP	33K	5%	1/10W
R763	1-216-821-11	METAL CHIP	1K	5%	1/10W
⚠ R767	1-216-365-61	METAL OXIDE	0.47	5%	2W F
R768	1-216-833-11	METAL CHIP	10K	5%	1/10W
R769	1-216-805-11	METAL CHIP	47	5%	1/10W
R770	1-216-864-11	SHORT CHIP	0		
R771	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R772	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R773	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R774	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R775	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R776	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R777	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R778	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R779	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R780	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R781	1-216-839-11	METAL CHIP	33K	5%	1/10W
R782	1-216-842-11	METAL CHIP	56K	5%	1/10W
R783	1-216-845-11	METAL CHIP	100K	5%	1/10W
R784	1-216-845-11	METAL CHIP	100K	5%	1/10W
R785	1-216-845-11	METAL CHIP	100K	5%	1/10W
R786	1-216-845-11	METAL CHIP	100K	5%	1/10W
R787	1-216-835-11	METAL CHIP	15K	5%	1/10W
R788	1-216-835-11	METAL CHIP	15K	5%	1/10W
R791	1-216-845-11	METAL CHIP	100K	5%	1/10W
R792	1-216-849-11	METAL CHIP	220K	5%	1/10W
R801	1-216-809-11	METAL CHIP	100	5%	1/10W
R802	1-216-801-11	METAL CHIP	22	5%	1/10W
R803	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R804	1-216-801-11	METAL CHIP	22	5%	1/10W
R805	1-216-853-11	METAL CHIP	470K	5%	1/10W
R806	1-216-841-11	METAL CHIP	47K	5%	1/10W
R807	1-216-837-11	METAL CHIP	22K	5%	1/10W
R808	1-216-801-11	METAL CHIP	22	5%	1/10W
R809	1-216-809-11	METAL CHIP	100	5%	1/10W
R810	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R811	1-216-845-11	METAL CHIP	100K	5%	1/10W
R812	1-216-841-11	METAL CHIP	47K	5%	1/10W
R813	1-216-853-11	METAL CHIP	470K	5%	1/10W
R814	1-216-837-11	METAL CHIP	22K	5%	1/10W
R815	1-216-833-11	METAL CHIP	10K	5%	1/10W
R816	1-216-821-11	METAL CHIP	1K	5%	1/10W
R817	1-216-841-11	METAL CHIP	47K	5%	1/10W
R818	1-216-833-11	METAL CHIP	10K	5%	1/10W
R819	1-216-839-11	METAL CHIP	33K	5%	1/10W
R820	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R821	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R822	1-216-809-11	METAL CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remark
R823	1-216-833-11	METAL CHIP	10K	5%	1/10W
R824	1-216-817-11	METAL CHIP	470	5%	1/10W
R825	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R826	1-216-821-11	METAL CHIP	1K	5%	1/10W
R827	1-216-845-11	METAL CHIP	100K	5%	1/10W
R829	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R830	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R831	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R832	1-216-857-11	METAL CHIP	1M	5%	1/10W
R836	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R837	1-216-845-11	METAL CHIP	100K	5%	1/10W
R838	1-216-837-11	METAL CHIP	22K	5%	1/10W
R839	1-216-797-11	METAL CHIP	10	5%	1/10W
R840	1-216-864-11	SHORT CHIP	0		
R841	1-216-833-11	METAL CHIP	10K	5%	1/10W
R842	1-216-864-11	SHORT CHIP	0		
R843	1-216-845-11	METAL CHIP	100K	5%	1/10W
R844	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R845	1-216-864-11	SHORT CHIP	0		
R846	1-216-797-11	METAL CHIP	10	5%	1/10W
R847	1-216-864-11	SHORT CHIP	0		
		< RELAY >			
RY601	1-755-307-21	RELAY (EC78P)			
RY602	1-755-307-21	RELAY			
		< TRANSFORMER >			
T801	1-433-741-11	TRANSFORMER, IF			
		< TERMINAL >			
TB601	1-780-381-11	TERMINAL BOARD, PUSH (ANTENNA) 4P (SPEAKER HIGH FREQ. IMPEDANCE USE 8Ω) (EC78P)			
TB602	1-536-708-81	TERMINAL BOARD, PUSH (4P) (SPEAKER IMPEDANCE USE 6Ω) (EC68P)			
TB602	1-536-708-81	TERMINAL BOARD, PUSH (4P) (SPEAKER LOW FREQ. IMPEDANCE USE 8Ω) (EC78P)			
		< VIBRATOR >			
X801	1-813-917-11	VIBRATOR, CRYSTAL (75MHz)			
**********					
		MOTOR BOARD (EC68P/EC78P: US, CND)			
		**********			
		< CONNECTOR >			
CN001	1-779-542-21	CONNECTOR, FFC (LIF (NON-ZIF)) 5P			
		< SWITCH >			
S001	1-786-514-21	SWITCH, LEVER (SLIDE)			
**********					
	A-1379-659-A	PANEL BOARD, COMPLETE (EC78P: US, CND)			
	A-1379-717-A	PANEL BOARD, COMPLETE (EC68P: US)			
	A-1426-107-A	PANEL BOARD, COMPLETE (EC78P: UK)			
	A-1426-165-A	PANEL BOARD, COMPLETE (EC68P: AUS)			
		**********			
	2-649-178-01	PLATE, LIGHT GUIDE			
	2-649-179-01	SHEET (LCD)			
	2-665-175-01	SHEET (REFLECTOR)			

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C302	1-126-964-11	ELECT	10uF	20%	50V
C303	1-126-964-11	ELECT	10uF	20%	50V
C304	1-100-597-91	CERAMIC CHIP	0.1uF	10%	25V
C305	1-126-964-11	ELECT	10uF	20%	50V
C306	1-104-655-91	ELECT	470uF	20%	6.3V
C308	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
					(EC78P: UK)
C309	1-126-965-91	ELECT	22uF	20%	50V
					(EC78P: UK)
C310	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(EC78P: UK)
C311	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(EC78P: UK)
C312	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(EC78P: UK)
C313	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C314	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C315	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C316	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C317	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C319	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C320	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C321	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C328	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C330	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C340	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C341	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C342	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C343	1-126-965-91	ELECT	22uF	20%	50V
					(EC78P: UK)
C344	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
					(EC78P: UK)
C345	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
					(EC78P: UK)
C346	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C347	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C348	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C351	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(EC68P/EC78P: US, CND)
C352	1-126-964-11	ELECT	10uF	20%	50V
					(EC68P/EC78P: US, CND)
C353	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(EC68P/EC78P: US, CND)
C354	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C355	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C356	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C357	1-126-965-91	ELECT	22uF	20%	50V
					(EC68P/EC78P: US, CND)
		< CONNECTOR >			
CN301	1-784-753-11	CONNECTOR, FFC 31P			
CN302	1-784-735-11	CONNECTOR, FFC 13P (EC78P: UK)			
CN303	1-815-550-11	PIN, CONNECTOR (PWB) 2P			
CN306	1-815-443-11	PIN, CONNECTOR (PWB) 2P			
CN311	1-779-273-11	CONNECTOR, FFC (LIF (NON-ZIF)) 5P			
					(EC68P/EC78P: US, CND)

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D301	6-501-722-01	DIODE MAZ8043GMLS0	
D302	6-501-817-01	DIODE MA2J1110GLS0	
D303	6-500-334-01	DIODE MC2836-T112-1	
D304	6-501-817-01	DIODE MA2J1110GLS0	
D305	6-501-817-01	DIODE MA2J1110GLS0 (EC78P: UK)	
D306	8-719-063-79	DIODE 1N4002B (EC68P/EC78P: US, CND)	
D307	6-501-817-01	DIODE MA2J1110GLS0	
			(EC68P/EC78P: US, CND)
		< FERRITE BEAD >	
FB301	1-500-329-21	INDUCTOR, FERRITE BEAD	
		< IC >	
IC301	A-1551-183-A	IC MB90F831PF-G-SPE1 (for service)	
			(EC78P: UK)
IC301	A-1551-185-A	IC MB90F831PF-G-SPE1 (for service)	
			(EC68P/EC78P: US, CND)
IC302	6-711-556-01	IC NJL24H400B-SA	
IC303	8-759-598-69	IC BA6956AN (EC68P/EC78P: US, CND)	
		< JUMPER RESISTOR >	
JR301	1-216-864-11	SHORT CHIP 0	
JR302	1-216-864-11	SHORT CHIP 0	
JR303	1-216-864-11	SHORT CHIP 0	
JR304	1-216-864-11	SHORT CHIP 0	
JR305	1-216-864-11	SHORT CHIP 0	
JR307	1-216-864-11	SHORT CHIP 0	
JR308	1-216-864-11	SHORT CHIP 0	
JR309	1-216-864-11	SHORT CHIP 0	
JR310	1-216-864-11	SHORT CHIP 0	
JR311	1-216-864-11	SHORT CHIP 0	
JR313	1-216-864-11	SHORT CHIP 0	
JR315	1-216-864-11	SHORT CHIP 0	
		< LIQUID CRYSTAL DISPLAY >	
LCD301	1-802-584-11	DISPLAY PANEL, LIQUID	
		< LED >	
LED301	6-501-479-01	LED 1L0341Y23E0CA602 (I/⏻, STANDBY)	
		< TRANSISTOR >	
Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q302	8-729-037-13	TRANSISTOR KTA1271Y	
Q303	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q304	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q305	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q306	8-729-038-28	TRANSISTOR RT1N441C-TP-1	
Q307	6-551-696-01	TRANSISTOR ISA1235AC1TP-1EF	
			(EC78P: UK)
Q308	8-729-038-28	TRANSISTOR RT1N441C-TP-1 (EC78P: UK)	
Q309	8-729-040-76	TRANSISTOR KTA1273-Y-AT (EC78P: UK)	
Q310	8-729-120-28	TRANSISTOR 2SC1623-L5L6 (EC78P: UK)	
Q311	8-729-024-43	TRANSISTOR 2SA1365-T112-1EF	
			(EC78P: UK)
Q312	8-729-024-43	TRANSISTOR 2SA1365-T112-1EF	
			(EC78P: UK)
Q313	8-729-024-43	TRANSISTOR 2SA1365-T112-1EF	
			(EC78P: UK)

PANEL

Ref. No.	Part No.	Description			Remark
Q314	8-729-024-43	TRANSISTOR	2SA1365-T112-1EF		(EC78P: UK)
Q315	8-729-047-62	TRANSISTOR	2SC3440-T12-1F (EC78P: UK)		
Q316	8-729-047-62	TRANSISTOR	2SC3440-T12-1F (EC78P: UK)		
Q317	8-729-047-62	TRANSISTOR	2SC3440-T12-1F (EC78P: UK)		
Q318	8-729-047-62	TRANSISTOR	2SC3440-T12-1F (EC78P: UK)		
		< RESISTOR >			
R301	1-216-809-11	METAL CHIP	100	5%	1/10W
R302	1-216-809-11	METAL CHIP	100	5%	1/10W
R303	1-216-809-11	METAL CHIP	100	5%	1/10W
R304	1-216-809-11	METAL CHIP	100	5%	1/10W
R305	1-216-809-11	METAL CHIP	100	5%	1/10W
R306	1-216-809-11	METAL CHIP	100	5%	1/10W
R307	1-216-809-11	METAL CHIP	100	5%	1/10W
R308	1-216-809-11	METAL CHIP	100	5%	1/10W
R309	1-216-809-11	METAL CHIP	100	5%	1/10W
R310	1-216-809-11	METAL CHIP	100	5%	1/10W
R311	1-216-817-11	METAL CHIP	470	5%	1/10W
R312	1-216-809-11	METAL CHIP	100	5%	1/10W
R313	1-216-809-11	METAL CHIP	100	5%	1/10W
R314	1-216-809-11	METAL CHIP	100	5%	1/10W
R315	1-216-809-11	METAL CHIP	100	5%	1/10W
R316	1-216-809-11	METAL CHIP	100	5%	1/10W
R317	1-216-809-11	METAL CHIP	100	5%	1/10W
R318	1-216-809-11	METAL CHIP	100	5%	1/10W
R319	1-216-809-11	METAL CHIP	100	5%	1/10W
R320	1-216-809-11	METAL CHIP	100	5%	1/10W
R321	1-216-809-11	METAL CHIP	100	5%	1/10W
R322	1-216-809-11	METAL CHIP	100	5%	1/10W
R323	1-216-809-11	METAL CHIP	100	5%	1/10W
R324	1-216-809-11	METAL CHIP	100	5%	1/10W
R325	1-216-797-11	METAL CHIP	10	5%	1/10W
R326	1-216-809-11	METAL CHIP	100	5%	1/10W
R327	1-216-809-11	METAL CHIP	100	5%	1/10W
R328	1-216-833-11	METAL CHIP	10K	5%	1/10W
R329	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R330	1-216-819-11	METAL CHIP	680	5%	1/10W
R331	1-216-845-11	METAL CHIP	100K	5%	1/10W
R332	1-216-833-11	METAL CHIP	10K	5%	1/10W
R333	1-216-845-11	METAL CHIP	100K	5%	1/10W
R334	1-216-833-11	METAL CHIP	10K	5%	1/10W
R335	1-216-837-11	METAL CHIP	22K	5%	1/10W
R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
R337	1-216-813-11	METAL CHIP	220	5%	1/10W
R338	1-216-789-11	METAL CHIP	2.2	5%	1/10W (EC78P: UK)
R339	1-216-789-11	METAL CHIP	2.2	5%	1/10W (EC78P: UK)
R340	1-216-829-11	METAL CHIP	4.7K	5%	1/10W (EC78P: UK)
R341	1-216-839-11	METAL CHIP	33K	5%	1/10W (EC78P: UK)
R342	1-216-849-11	METAL CHIP	220K	5%	1/10W (EC78P: UK)
R343	1-216-853-11	METAL CHIP	470K	5%	1/10W (EC78P: UK)
R344	1-216-826-11	METAL CHIP	2.7K	5%	1/10W (EC78P: UK)
R345	1-216-829-11	METAL CHIP	4.7K	5%	1/10W (EC78P: UK)
R346	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R347	1-216-817-11	METAL CHIP	470	5%	1/10W (EC78P: UK)
R348	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R349	1-216-817-11	METAL CHIP	470	5%	1/10W (EC78P: UK)
R350	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R351	1-216-817-11	METAL CHIP	470	5%	1/10W (EC78P: UK)
R352	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R353	1-216-817-11	METAL CHIP	470	5%	1/10W (EC78P: UK)
R354	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R355	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R356	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R357	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R358	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R359	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R360	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R361	1-216-841-11	METAL CHIP	47K	5%	1/10W (EC78P: UK)
R362	1-216-837-11	METAL CHIP	22K	5%	1/10W
R363	1-216-837-11	METAL CHIP	22K	5%	1/10W
R364	1-216-837-11	METAL CHIP	22K	5%	1/10W (EC78P: UK)
R365	1-216-837-11	METAL CHIP	22K	5%	1/10W (EC78P: UK)
R366	1-216-833-11	METAL CHIP	10K	5%	1/10W (EC78P: UK)
R367	1-216-837-11	METAL CHIP	22K	5%	1/10W (EC78P: UK)
R368	1-216-833-11	METAL CHIP	10K	5%	1/10W (EC78P: UK)
R369	1-216-821-11	METAL CHIP	1K	5%	1/10W
R370	1-216-821-11	METAL CHIP	1K	5%	1/10W
R371	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R372	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R373	1-216-864-11	SHORT CHIP	0 (EC78P: UK)		
R374	1-216-821-11	METAL CHIP	1K	5%	1/10W (EC78P: UK)
R375	1-216-864-11	SHORT CHIP	0 (EC78P: UK)		
R376	1-216-833-11	METAL CHIP	10K	5%	1/10W
R377	1-216-833-11	METAL CHIP	10K	5%	1/10W
R378	1-216-839-11	METAL CHIP	33K	5%	1/10W
R379	1-216-843-11	METAL CHIP	68K	5%	1/10W
R380	1-216-817-11	METAL CHIP	470	5%	1/10W
R381	1-216-833-11	METAL CHIP	10K	5%	1/10W
R382	1-216-833-11	METAL CHIP	10K	5%	1/10W
R383	1-216-833-11	METAL CHIP	10K	5%	1/10W
R384	1-216-833-11	METAL CHIP	10K	5%	1/10W
R385	1-216-821-11	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R386	1-216-821-11	METAL CHIP	1K	5%	1/10W
R387	1-216-821-11	METAL CHIP	1K	5%	1/10W
R389	1-216-821-11	METAL CHIP	1K	5%	1/10W
					(EC68P/EC78P: US, CND)
R389	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
					(EC78P: UK)
R390	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(EC78P)
R391	1-216-821-11	METAL CHIP	1K	5%	1/10W
					(EC78P: UK)
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
					(EC68P: AUS)
R392	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(EC68P/EC78P: US, CND)
R396	1-216-851-11	METAL CHIP	330K	5%	1/10W
R400	1-216-821-11	METAL CHIP	1K	5%	1/10W
R401	1-216-821-11	METAL CHIP	1K	5%	1/10W
R402	1-216-845-11	METAL CHIP	100K	5%	1/10W
R405	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R406	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R412	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R413	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R414	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R415	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R416	1-216-828-11	METAL CHIP	3.9K	5%	1/10W
R417	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R418	1-216-835-11	METAL CHIP	15K	5%	1/10W
R419	1-216-838-11	METAL CHIP	27K	5%	1/10W
R420	1-216-845-11	METAL CHIP	100K	5%	1/10W
R421	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(EC78P: UK)
R422	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R426	1-216-845-11	METAL CHIP	100K	5%	1/10W
					(EC78P: UK)
R428	1-216-841-11	METAL CHIP	47K	5%	1/10W
					(EC78P: UK)
R429	1-216-833-11	METAL CHIP	10K	5%	1/10W
R433	1-216-817-11	METAL CHIP	470	5%	1/10W
R434	1-216-817-11	METAL CHIP	470	5%	1/10W
R435	1-216-817-11	METAL CHIP	470	5%	1/10W
R441	1-216-840-11	METAL CHIP	39K	5%	1/10W
					(EC68P/EC78P: US, CND)
R442	1-216-837-11	METAL CHIP	22K	5%	1/10W
					(EC68P/EC78P: US, CND)
R443	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(EC68P/EC78P: US, CND)
R444	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
					(EC68P/EC78P: US, CND)
R445	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
					(EC68P/EC78P: US, CND)
R446	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R447	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R448	1-216-833-11	METAL CHIP	10K	5%	1/10W
		< ROTARY ENCODER >			
S301	1-786-417-11	ENCODER, ROTARY (VOLUME)			
		< SWITCH >			
SW303	1-771-410-21	SWITCH, TACTILE (⏮ ◀◀ – TUNING)			
SW304	1-771-410-21	SWITCH, TACTILE (FUNCTION)			
SW305	1-771-410-21	SWITCH, TACTILE (TUNING + ▶▶ ⏭)			
SW311	1-771-410-21	SWITCH, TACTILE (CD ▶)			
SW312	1-771-410-21	SWITCH, TACTILE (❚❚)			
SW313	1-771-410-21	SWITCH, TACTILE (■)			
SW314	1-771-410-21	SWITCH, TACTILE (FOLDER +)			
SW315	1-771-410-21	SWITCH, TACTILE (FOLDER –)			
SW316	1-771-410-21	SWITCH, TACTILE (EQ)			
SW317	1-771-410-21	SWITCH, TACTILE (DSGX)			
SW318	1-771-410-21	SWITCH, TACTILE (PLAY MODE/TUNING MODE)			
SW319	1-771-410-21	SWITCH, TACTILE (DISPLAY)			
		< VIBRATOR >			
X301	1-814-067-11	OSCILLATOR, CRYSTAL (32.768kHz)			
X302	1-813-548-21	VIBRATOR, CERAMIC (6MHz)			
**********					
		PT BOARD			
		*********			
		< CAPACITOR >			
C051	1-165-621-91	CERAMIC CHIP	0.1uF		50V
C052	1-164-156-11	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN051	1-819-972-11	HOLDER, CABLE 8P			
⚠ CN053	1-793-660-11	PIN, CONNECTOR (PC BOARD) 3P			
		< DIODE >			
D051	6-500-334-01	DIODE MC2836-T112-1			
D052	6-500-335-01	DIODE MC2838-T112-1			
D055	6-500-335-01	DIODE MC2838-T112-1			
		< TRANSFORMER >			
⚠ PT001	1-443-846-11	TRANSFORMER, POWER			
					(EC68P: US/EC78P: US, CND)
⚠ PT001	1-443-912-11	TRANSFORMER, POWER (EC78P: UK)			
⚠ PT002	1-445-105-11	TRANSFORMER, POWER (EC68P: AUS)			
		< RELAY >			
⚠ RY001	1-755-334-11	RELAY, AC POWER (EC68P: US/EC78P)			
⚠ RY002	1-755-496-11	RELAY (EC68P: AUS)			
**********					
		REG BOARD			
		**********			
		< CAPACITOR >			
C698	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
		< IC >			
IC601	8-759-231-56	IC TA7809S			
		< CABLE HOLDER >			
W610	1-824-027-21	HOLDER, CABLE 3P			
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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
57	1-835-338-21	CABLE, FLEXIBLE FLAT (31 CORE)	
60	1-831-774-21	CABLE, FLEXIBLE FLAT (9 CORE)	
62	1-835-336-21	CABLE, FLEXIBLE FLAT (11 CORE)	
101	1-832-838-21	CABLE, FLEXIBLE FLAT (13 CORE) (EC78P: UK)	
⚠ 106	1-769-744-81	CORD, POWER (EC78P: UK)	
⚠ 106	1-834-967-21	CORD, POWER (EC68P: AUS)	
⚠ 106	1-834-978-11	CORD, POWER (EC68P: US/EC78P: US, CND)	
107	1-834-181-21	CABLE, FLEXIBLE FLAT (21 CORE) (EC78P: UK)	
107	1-835-334-21	CABLE, FLEXIBLE FLAT (21 CORE)	(EC68P/EC78P: US, CND)
108	1-832-666-21	CABLE, FLEXIBLE FLAT (5 CORE)	(EC68P/EC78P: US, CND)
152	1-831-744-21	CABLE, FLEXIBLE FLAT (5 CORE)	
153	1-835-276-21	CABLE, FLEXIBLE FLAT (5 CORE) (EC78P)	
201	1-797-193-12	MECHANICAL, CD (DLM3A) (EC78P: UK)	
⚠ 206	A-4735-357-A	BASE ASSY, OP (KSM-213D) (EC78P: UK)	
207	1-832-404-21	CABLE, FLEXIBLE FLAT (16 CORE) (EC78P: UK)	
251	A-1242-967-A	LOADING (BK) ASSY (EC68P/EC78P: US, CND)	
⚠ 256	A-4735-357-A	BASE ASSY, OP (KSM-213D)	(EC68P/EC78P: US, CND)
257	1-832-404-21	CABLE, FLEXIBLE FLAT (16 CORE)	(EC68P/EC78P: US, CND)
M601	1-787-400-11	D.C. FAN (EC68P/EC78P: UK)	
M601	1-787-631-11	FAN, DC (EC78P: US, CND)	
⚠ PT003	1-445-346-11	TRANSFORMER, POWER (EC68P: AUS)	
⚠ PT003	1-445-476-11	TRANSFORMER, POWER (EC68P: US)	
⚠ PT004	1-445-343-11	TRANSFORMER, POWER (EC78P: UK)	
⚠ PT004	1-445-345-11	TRANSFORMER, POWER (EC78P: US, CND)	
S201	1-771-853-11	SWITCH, DETECTION (LIMIT)	
**********			
		ACCESSORY	
		**********	
⚠	1-770-019-61	ADAPTOR, CONVERSION PLUG (EC78P: UK)	

MEMO

REVISION HISTORY

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Also, clicking the version at the top of the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2008.03	New